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Foreword



A large, handwritten signature in black ink, which appears to be "John P. Jumper".

Gen John P. Jumper
Chief of Staff
United States Air Force

Last year the RAF and the US Air Force were once again side by side over the skies of Iraq. During 21 days of combat, we demonstrated the power of organized and integrated air and space forces in joint and coalition warfare. We did not do it alone, but we contributed more than our fair share to enable the rapid success of ground forces. At the same time, we were able to join with our special operations forces—air and land—to keep activity in western Iraq from interfering with the main effort. In close coordination with ground forces, air-power prevented enemy attempts to mount coordinated or coherent resistance. These efforts on the part of coalition Airmen were largely outside the media spotlight and beyond public recognition. But make no mistake; our Airmen were key to the swift and overwhelming military victory.

What made it work, and what must we do to get better? We can point to three major leveraging capabilities. First, we must make integration work. Integration is more than being “net-centric” or a “common operating picture” or “information sharing.” It’s about the ability of machines to direct the activities of other machines to produce rapid target location and identification. We are far from having this right, but we did make tremendous progress during the dust storm in Operation Iraqi Freedom, where traditional stand-alone platforms—manned, unmanned, and space—were lashed together in a real-time network that located and destroyed Iraqi forces moving to reinforce depleted Republican Guard divisions. Second is our growing ability to predict and persist. We are at the infant stages of prediction, but better tools will produce

the “battlefield forensics” for us to analyze patterns and draw logical conclusions about enemy options. Persistence is a tremendous leveraging capability. The evolution of remotely piloted and unmanned vehicles will give us 24-hour persistence to stare at an area and study patterns of activity, as well as deliver precise target location and identification to manned aircraft. Our third competitive advantage is our people and our training. Fifty years of NATO interoperability and bilateral advanced training have allowed us to minimize the nagging barriers to communications, terminology, and basic airmanship. Fourteen years of contingency operations have kept our skills fresh, our tactics current, and our mutual respect strong.

Bonds between the Royal Air Force and the United States Air Force have never been stronger. Especially in the past 14 years, we have shared the skies during all major contingency operations. Practice and hard work have built this partnership, and we require more practice and hard work to keep it strong.

You will note that the current editions of both *RAF Air Power Review* and *Air and Space Power Journal* contain the same lead articles. These articles are meant to stimulate our thinking, encourage frank dialogue, and make us all better. Airmen have always accepted the realities of changing conditions with adaptable tactics and flexible doctrine. In our ever increasingly complex and dynamic world, we will rely on agile thinking more than ever. With that in mind, we commend this publication to you.



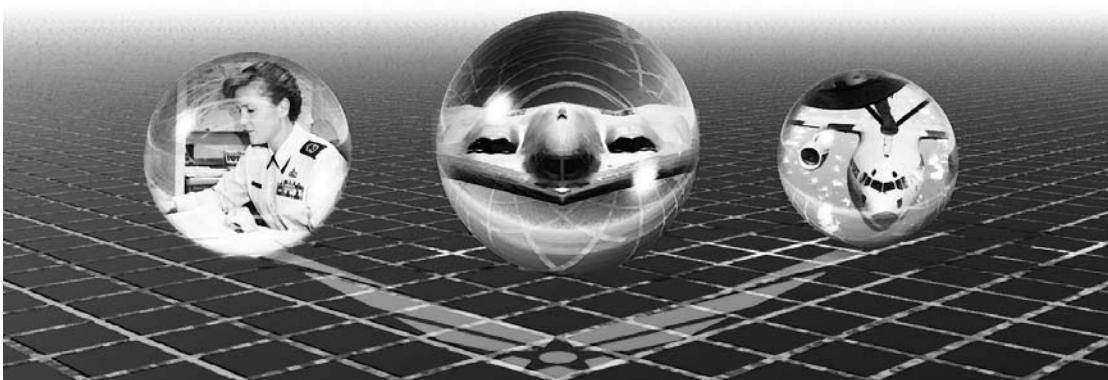
Air Chief Marshal Sir Jock Stirrup
Chief of the Air Staff
Royal Air Force



Past Trends and Future Plans

LT GEN DUNCAN J. McNABB, USAF

DR. CHRISTOPHER J. BOWIE



WHEN CONDUCTING AIR Force strategic planning, we pay particular attention to key historical trends. The powerful forces driving these trends may prove difficult to change or deflect, so analyzing the direction in which these vectors are moving may offer a window into the Air Force's future. This short analysis examines historical tendencies in Air Force resource allocation to mission/capability areas, the implications they hold for future investment and policy decisions, and policies the Air Force might pursue to increase future US joint-force capabilities more efficiently and effectively.

In an unprecedented parsing of Air Force spending patterns from 1962 to 2009 (the end of our current detailed-planning horizon), the Air Force's Strategic Planning Directorate categorized nearly 900 individual programs into broader, more telling mission and functional areas.¹ The result is a single, simple chart (fig. 1) that depicts the net result of thousands of decisions made at the highest levels of the

Air Force and government over a tumultuous half century. This stack of bands tells the epic story of dramatic, strategic shifts: the end of the New Look and the beginning of flexible response, the Vietnam conflict, the Reagan buildup in the 1980s, the demise of the Soviet Union and end of the Cold War, the first Gulf War, the Serbian conflict of 1999, the terrorist attacks in 2001, and the recent operations in Afghanistan and Iraq. We believe that the chart provides revealing insights into the changing nature of Air Force resource-allocation patterns over this turbulent period and the difficult strategic-investment decisions that lie ahead.

To create this relational, historical look, we organized the data into three broad capability areas:

1. Foundations (activities underpinning the overall organization but not attributable to a specific capability or system, such as headquarters, training, health care, general research and development, security, base-operating support, and environmental and quality-of-life programs)

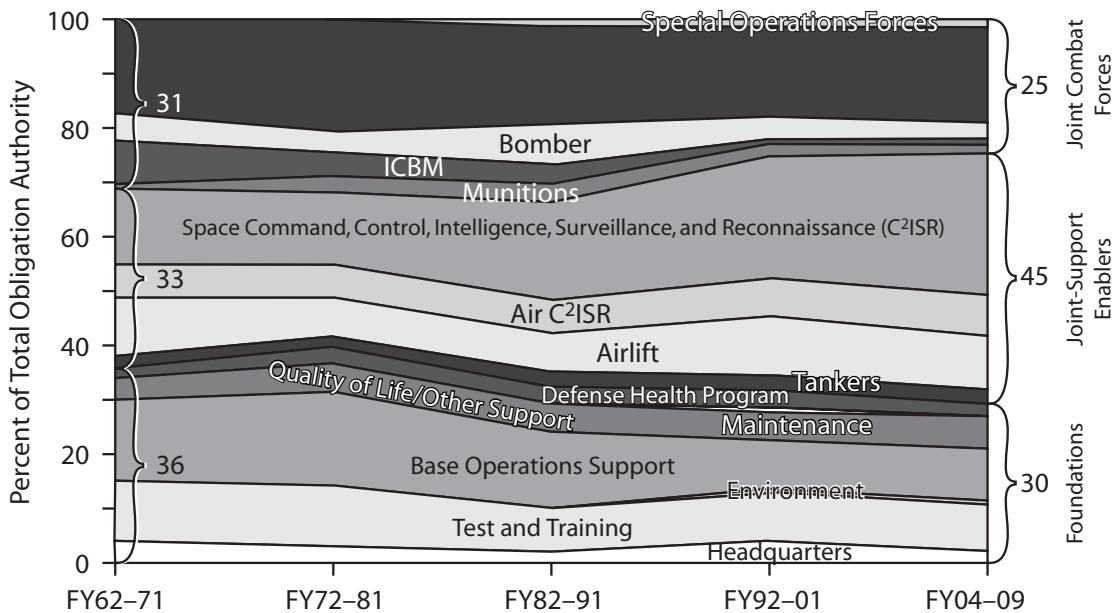


Figure 1. Five decades of USAF resource allocation. Reductions in joint combat forces and foundations paid for increased emphasis on joint enabling forces.

2. Joint-support enablers (capabilities used by all the services and the Office of the Secretary of Defense, such as airlift; refueling; and command, control, communications, computers, intelligence, surveillance, and reconnaissance [C⁴ISR])
3. Joint combat forces (such as fighters, bombers, special operations, ballistic missiles, and munitions)

To highlight broad trends, we aggregated by decade and displayed the results as a function of percentage of the total Air Force budget.

Looking at the broad capability areas—foundations, joint-support enablers, and joint combat forces—we found several interesting features. For example, spending on foundations has declined from about 36 percent of the total budget in the 1960s to about 30 percent in the current decade. So the constant drives for efficiency that characterize Air Force operations have had substantial payoff. The two remaining categories—joint-support enablers and joint combat forces—provide a

striking illustration of the Air Force’s growing investment in joint-support forces, such as airlift, refueling, and air-breathing/space-based C⁴ISR. These accounts grew from 33 percent to 45 percent of the Air Force budget.

The growth in these mission areas has come at the expense of the “foundations” and what we traditionally think of when we consider airpower: combat forces. Current, conventional combat forces are far more lethal, thanks to advanced aircraft, precision weapons, and modern C⁴ISR, but spending on these forces has declined from 31 percent of the total Air Force budget in the 1960s to about 25 percent in this decade. At the same time, our combat-force capability has increased by several orders of magnitude.

The layperson (or even an informed observer) who contemplates the future of the Air Force tends to look at force levels of combat aircraft, such as the number of fighter wings or the inventory of such aircraft. In reality, this capability area represents only a small percentage of the Air Force budget. Taken to its logical

extreme, for example, cutting all combat aircraft, munitions, and ballistic missiles in the Air Force would reduce its total budget by about only one-fourth—and would undermine US joint-combat capabilities. (For example, inability to control the air would greatly increase risks to any future joint operation.)

Looking out several decades, we see that these trends hint at the issues likely to challenge future decision makers. We will continue to strive to increase peacetime operating efficiency in the foundations, but the data indicates that the “low-hanging fruit” has already been plucked. Gaining additional increases in efficiency will undoubtedly become more difficult.

On average, Air Force resource allocation to the joint-support area has grown by 0.26 percent per year.² If this trend continues, in another 20 years spending on this area would consume more than half of the Air Force budget—a likely prospect, given future modernization needs in joint support. Specifically, airlift is critical to the rapid deployment and supply of US forces around the world; the ongoing C-17 and C-130J programs show little indication of a decline in spending for some time to come. Similarly, tankers are essential to deployment and combat operations of all the services. The aging condition of the KC-135 fleet means that the currently planned KC-767 lease or buy is likely only a first step in tanker-force recapitalization that will require sustained spending in this area.

Air C⁴ISR comprises such air-breathing assets as RC-135s, E-8 ground-surveillance platforms, E-3 airborne warning and control systems, U-2s, the Global Hawk and Predator unmanned aircraft, and the E-10 multimission command and control system. Space C⁴ISR includes satellite constellations for weather, missile warning, global positioning, communications, various spaceborne sensors (such as the proposed space-based radar), and the launch systems to put these craft into orbit. Ground, naval, and air forces all require these capabilities to transform and conduct effective operations. But developing and fielding

C⁴ISR systems will place additional pressures on other elements of the Air Force.

Our combat forces face similar pressures. We will need to replace (or substantially refurbish) our intercontinental ballistic missiles, most of them procured in the 1960s, within 20 years or so. The bomber force is showing its age, even as demand for long-range strike grows—and development of a new strike system would demand a substantial increase in resources. The legacy fighter force is aging out fairly rapidly due to the procurement “holiday” in the 1990s and heavy usage in forward-presence and combat operations since the Gulf Wars. As the F/A-22 and F-35 enter service and planners begin to exploit the exciting new opportunities offered by unmanned combat aircraft, spending in this area will also likely grow.

Overall, we are seeing modernization requirements for almost all capability elements over the next several decades. This situation will pose many problems for Air Force decision makers in the coming years—difficulties that the anticipated fiscal environment will only exacerbate. For instance, by 2010 or so, retirement of the first wave of baby boomers will drive up entitlement spending substantially. From 2010 to 2030, an estimated 30 million Americans will pass the age of 65 but only 10 million new workers will enter the workforce. As the largest discretionary account, defense spending could come under intense pressure to meet entitlement demands.

How should the Air Force move ahead? One obvious place to start is seeking additional efficiencies in the foundations area. The upcoming efforts of the Base Realignment and Closure Commission will play a key role as we adjust our basing infrastructure to match forces and strategy. As noted previously, however, we will probably encounter limitations on the potential to achieve further dramatic reductions in infrastructure.

Determining the right balance of capabilities—both old and new—lies at the core of the Air Force’s capabilities-based planning process, which utilizes concepts of operations to determine investment priorities. Broadly

speaking, our strategy involves transformation—using concepts of operations, divestiture, reorganization, exploitation of technology, and fully resourced modernization. By divesting selected legacy systems that are relatively inefficient and resource-intensive, and then implementing innovative organizational constructs (such as more tightly integrating active, Guard, and Reserve units), we can use technology to upgrade some of these systems to do new things. We can also fully resource the new capabilities with crews, maintenance personnel, spares, and other support to take full advantage of our investment.

We are certainly using legacy systems in ways rarely considered before. For example, combining technology such as the global positioning system and the Joint Direct Attack Munition with the expert skill of Airmen on the ground, B-1s and B-52s successfully neutralized and destroyed enemy forces in Afghanistan and Iraq—even those close to friendly forces. The new systems coming online—the C-17, F/A-22, F-35, KC-767, E-10A, Global Hawk, Predator, air operations center, transformational communications, and others—will offer much higher reliability, availability, and capability than current legacy elements. We must meet the challenge of taking full advantage of these new capabilities.

The C-17A offers a useful example. In the 1990s, we decided to procure 120 of these aircraft to replace our 265 C-141s; at the time, many people expressed concerns regarding the ability of a smaller, more capable fleet to substitute for a larger, less capable force. Today, however, no one would want to trade the C-17s for the C-141s. The new aircraft features much higher availability rates, requires a much smaller number of backup aircraft, and offers substantially lower operating costs overall to transport the same amount of cargo. To exploit the capabilities of the new system, the Air Force increased the crew ratio for the C-17 to 5.0 (compared to the C-141's ratio of 3.6) and enhanced a host of support functions that enable the new system to provide much greater capability than did the C-141s.³ The program proved so successful in changing

how we do mobility that, to meet increased requirements, we now plan to purchase 180 C-17s—perhaps even more.

Such an approach could apply equally to combat and joint-support forces. For example, increasing the crew ratios for fighter, airlift, tanker, and Joint Strike Fighter aircraft would maximize operational potential. Fully supporting air operations centers with sufficient numbers of trained personnel and expanding the “reachback” capabilities to evaluate data collected by unmanned aircraft and orbiting satellites would also dramatically increase joint capabilities. Maximizing these future capabilities will require increased integration of our active, Guard, and Reserve components to ensure that we have the right people in the right place at the right time.

Balancing legacy-force upgrades/reductions with modernization will be difficult. But the direction of the trends outlined here indicates that this is the best available option in the face of emerging resource constraints. If we hold on to the whole range of legacy systems, increasing operations/support costs will consume our scarce modernization funding, and decreasing availability will limit our ability to support US national security. We need to transform. Specifically, we must utilize capabilities-based planning to establish priorities, upgrade some legacy systems to do new things, divest other “legacy” elements to free up resources, modernize, and then fully resource new capabilities by using organizational changes to active and Reserve units to maximize their potential. Such an approach will increase the capability of the Air Force’s joint-combat and support forces—and the capability of the joint force as a whole. □

Notes

1. Our thanks to John P. Wykle of Science Applications International Corporation and to Lt Col Peter Bonanno, Lt Col Micah Killion, and Maj Leanne Henry of the Air Force’s Long-Range Plans Directorate (XPXP).

2. In the 47 years considered, the percent of the Air Force budget spent on joint support has grown from 33 to 45. Dividing the difference (12 percent) by 47 yields an average of 0.255 percent per year.

3. Even if we increased the C-141 crew ratio, the older aircraft’s limited availability and decreasing reliability prohibit us from taking a similar approach.



Prelaunch Notes

LT COL PAUL D. BERG, EDITOR

Introducing the Arabic *ASPI*

AIR AND SPACE Power Journal has published editions in English, Spanish, and Portuguese since the 1940s. We are excited to announce the appearance of an Arabic edition, scheduled to begin publication in January 2005. The editors of the *ASPI International* journals, who are regional experts and native speakers, select articles for each issue, tailoring the content to their particular audience. Typically, some of these pieces are translations of English *ASPI* articles, but many are written by Spanish or Portuguese authors. A native of Colombia, Lt Col Lou Fuentes, USAF, retired, who edits the Spanish *ASPI*, served in US Southern Command and maintains numerous high-level military contacts throughout Latin America. Mr. Almerisio Lopes, a native of Brazil and editor of the Portuguese *ASPI*, is well connected with senior leaders in the Brazilian and Portuguese air forces. The editor of the Arabic *ASPI*, 2d Lt Basma Abdul-Hamid, possesses equally impressive credentials. A native of Baghdad, she grew up in Riyadh, Saudi Arabia, immigrated to the United States in 1989, and became an American citizen. Highly educated and experienced, she holds a master's degree from Northeastern University in Boston and formerly served as a security forces officer at Keesler AFB, Mississippi. For the inaugural edition of the Arabic *ASPI*, Lieutenant Abdul-Hamid has selected and translated previously published English *ASPI* articles about the formulation of US national security strategy, military strategy, and air and space strategy. She is soliciting articles from Arabic-speaking airmen worldwide and will publish them in upcoming quarterly issues as they become available.

The Spanish and Portuguese *ASPI* editions have met the needs of military services in 24

countries in Latin America, Europe, and Africa for decades. Allied air forces, armies, and navies often use *ASPI International* articles for instructional purposes in their academies and staff colleges. Officials of foreign governments also find them useful. We hope that the Arabic *ASPI* will prove equally valuable to at least 22 Middle Eastern and African nations.

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Flight Lines

GROUP CAPT CHRISTOPHER J. FINN, RAF, EDITOR, *RAF AIR POWER REVIEW*
LT COL PAUL D. BERG, USAF, EDITOR, *AIR & SPACE POWER JOURNAL*

British-American Cooperation in Airpower and Space Power

ALLIANCE AND COALITION operations—a long-standing, important aspect of military affairs—remain vital in today's global war on terror. Some alliances and coalitions have succeeded, but others have failed miserably. The United States and United Kingdom have enjoyed a mutually beneficial partnership for a considerable time but have also suffered significant tensions and disagreements. Such problems seem as endemic to international alliances as they are to marriages. Successful alliances and coalitions, like good marriages, overcome disagreements and find ways to cooperate in pursuit of common goals. As today's American and British Airmen ponder how best to coordinate their activities with colleagues from allied nations, they will find it useful to study how their predecessors integrated operations over the years.

Toward that end, the editors of *RAF Air Power Review* and *Air and Space Power Journal* have prepared this special joint issue. Both journals contain the same feature articles written by a mixture of British and American authors. To retain the articles' unique national flavors, the British contributors convey their thoughts in "the King's English," complete with British spelling and terminology, while the American authors employ US spelling and style. Since both *ASPI* and *RAF Air Power Review* traditionally include book reviews, readers will find that these issues have four reviews in common—two by US and two by UK writers. However, they will also note that the journals are not identical, a fact reflected by

differences in page layout as well as the inclusion of articles and reviews unique to each one. To view *Air and Space Power Journal* online, go to <http://www.airpower.maxwell.af.mil/airchronicles/apje.html>. *RAF Air Power Review* is available at <http://www.raf.mod.uk/downloads/documents.html>.

The editors hope that these special issues give British and American Airmen fresh insights into the dynamics of alliance and coalition operations. To make those discernments meaningful, the feature articles point out the rough spots as well as the happy times in Anglo-American relations. Sustaining a successful coalition military effort requires that leaders adopt a long-term strategic perspective to help them focus on the really important things and discount short-term distractions. Consequently, the feature articles span nine decades of war and peace, giving today's Airmen an appreciation of how their antecedents' experiences have shaped the current Anglo-American relationship.

Some people have called the US-UK partnership "special," perhaps because of shared historical experiences, culture, language, and personal friendships. Yet some of the trends evident in the ways British and American Airmen have cooperated can help both nations become more successful in forming coalitions with other nations. The future of US-UK relations in airpower and space power looks bright. Let it serve as an example of what other Airmen can do together if they set their minds to it. □



Ricochets and Replies

We encourage your comments via letters to the editor or comment cards. All correspondence should be addressed to the Editor, Air and Space Power Journal, 401 Chennault Circle, Maxwell AFB AL 36112-6428. You can also send your comments by e-mail to aspj@maxwell.af.mil. We reserve the right to edit the material for overall length.

THE REST OF THE STORY

My compliments to Dr. David Mets on his excellent review of Ed Rasimus's book *When Thunder Rolled: An F-105 Pilot over North Vietnam* in your spring 2004 edition (124–25; see also <http://www.airpower.maxwell.af.mil/airchronicles/bookrev/rasimus.html>). I have read the book twice and, with the exception of chapter 16, agree with Dr. Mets's assessment that it is a good one. In his introduction, Rasimus states that "this is a memoir, not a history. It is my recollection of the people, the places, and the events. These stories are all true. . . . I'm telling you what I felt and thought. . . . Others may view the events from another perspective, but this is mine." I view a couple of the events he describes in chapter 16 from a decidedly different perspective, having participated in one and having substantial knowledge of another.

As an Air Force officer, now retired, I know that our institution has long recognized the timeless military ethic of integrity, honor, loyalty, and selfless service. In 1966 I was a member of the 433rd Tactical Fighter Squadron (TFS), flying F-4Cs out of Ubon Air Base, Thailand. My squadron is the subject of two stories that describe the shootdown and rescue of "Tempest Three" and "Avenger Three," both in October 1966. I still have a good memory of those events, having been a squadron mate to the aircrews of Tempest Flight and the pilot of Avenger Three.

Ed Rasimus's storytelling, which I choose to believe represents the truth as he knew it, unfortunately impugns the honor and integrity of the 433rd TFS Airmen. My purpose is to set that part of the record straight. During the

two operations, my squadron mates exemplified the highest example of *integrity first* and *service before self*. In either rescue, the author's limited situational awareness did not allow him to perceive that members of the downed aircrews' formation supported them until they were recovered. As for my own rescue, my wingman—with no gun and no ordnance—repeatedly made 100-foot *dry* passes, dropping his wing tanks and lighting his afterburner over enemy ground forces in an attempt to keep their heads down and slow their progress toward me and my weapons-systems operator until Jolly Green pilot Leland Kennedy and his crew picked us up. We were not, as Rasimus described us, "another abandoned Phantom crew."

I also feel obligated to comment on the author's denigration of members of his own squadron, although this matter is not directly related to correcting errors about mine. Maybe when we were a bit immature, we made fun of some person who was an easy target. Perhaps that was part of our culture, but it is not something that ages well. That kind of behavior was not good then and should be considered a *foul* when it is documented in a public record that will forever disparage a person's memory to his friends and family—even more so when that someone paid the ultimate price in service to our nation.

I hope that your readers who examine *When Thunder Rolled* will be more comfortable knowing that the ethics that our institution currently values are timeless and commanded respect during this particular era of our air-power history. From this fighter pilot's point of view, the great heroes of the Vietnam War were our POWs, who kept their faith, resolve, and patriotism, as well as the rescue guys from all the services, who flew low in slow-moving helicopters, A-1Es, and forward-air-controller aircraft. They epitomized our core values.

Col Lacy W. Breckenridge, USAF, Retired
Lufkin, Texas



I just want to say this. I want to say it gently, but I want to say it firmly. There is a tendency for the world to say to America, "The big problems of the world are yours; you go and sort them out," and then to worry when America wants to sort them out.

—Prime Minister Tony Blair

The Current Battle Damage Assessment Paradigm Is Obsolete

LT COL HUGH CURRY, USAF*

DURING OPERATION IRAQI Freedom, the reporting of battle damage assessment (BDA) was neither fast enough nor adequate for operational commanders to make timely, informed decisions.¹ This problem is nothing new. Although we saw the same sort of debilitating core difficulties with BDA in after-action reporting from Operations Desert Storm, Deliberate Force, and Allied Force, we cannot blame the folks doing the job. The BDA analysts do the best they can to produce timely, accurate, and relevant assessments. The problem lies with the current BDA standard, which evolved from the attrition-based warfare conducted during World War II. Issues with BDA in Iraqi Freedom—nearly identical to findings identified in after-action reports of operations over the last 13 years—include inadequate tracking of mission execution; lack of a common BDA database; lack of BDA education and training; problems created by modern warfare's unprecedented speed, scope, and scale; and the low priority of BDA collection. Unfortunately, we had not resolved these matters by the time Iraqi Freedom began, although much well-intended time, effort, and money had gone into solving problems associated with legacy doctrine, tactics, techniques, and procedures. The type of warfare waged during Iraqi Freedom—characterized by technology-enabled effects-based planning and execution in a hyperoperations-tempo battlespace—has made the current BDA paradigm obsolete. In short, modern warfare begs for a new effects-based assessment approach, which the current BDA paradigm cannot provide.

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According to Joint Publication 3-60, *Joint Doctrine for Targeting*, dated 17 January 2002, which describes the assessment terms and processes used by the joint community, the combatant command's staff members are responsible for all assessments produced during campaigns executed in its theater of operations (III-1, -4, -7). They typically assign teams of analysts to validate all assessments, including tactical assessments produced by the components. These processes described in current doctrine have their origins in World War II, Korean War, and Vietnam War legacies of slow, deliberate, nonintegrated, sequential, attrition-based campaigns. Such a mind-set has unnecessarily forced the joint force commanders' (JFC) staffs into confirming tactical, kinetic attacks at the expense of evaluating whether or not missions have produced broader lethal/nonlethal operational- and strategic-level effects that meet theater objectives. This legacy depends upon "pictures" or electro-optical images to definitively confirm kinetic attacks on targets. Historically, analysts rely on the delivery of images that normally come from national technical means, which typically causes assessment to lag behind the pace of modern operations. Thus, the combatant commander might unnecessarily delay operations while waiting on individual images of tactical targets.

To speed up delivery of the product, we can compress the process timeline by decentralizing responsibility for tactical assessment down to the component designated by the JFC to produce specific tactical effects. The component analysts, including weapons-effects experts, have more familiarity with effects generated by their own organic kinetic and nonkinetic weapons and rely on empirical evidence gathered in near real time by their organic sensors. Using predetermined tactical indicators, they can then make more timely assessments, based on how well attacks achieved the predicted tactical effects. In turn, the JFC staffs, integrating component tactical assessments, can concentrate on evaluating the production of higher-level operational effects, based on predetermined operational indicators. This has always been the intent. However, because the JFC staffs stay busy confirming tactical attacks on targets, they cannot concentrate on verifying higher-level lethal and nonlethal effects. Clearly, at a minimum, we need to reevaluate doctrine in light of the modern capability to create operational effects at a faster pace.

Collaborative system-automation tools can resolve many of these problems. After Desert Storm, we emphasized development of an automated, collaborative targeting-database software application that included access to BDA data and reporting, independent of the location of users and distributed BDA producers. Regrettably, after a decade of work, the application has not yet met all user requirements. We must continue the development, certification, and deployment of an assessment-database application interoperable with the Defense Intelligence Agency's Modernized Integrated Database and databases resident in the Theater Battle Management Core Systems, as well as other component command

and control systems. Such an application is vitally important to the combatant commands and those distributed BDA producers tasked with supporting them. It will enable BDA-production organizations to deconflict production, making them more efficient and timely.

Following certification and deployment of the database, we must populate the data fields not only with assessments but also mission-related data. After the removal of Saddam Hussein, staff members at US Central Command Air Forces (CENTAF) have repeatedly stated that if they had just had a reliable way to track every executed air-to-ground mission, they could have completed some rudimentary but timely assessments, based on the reliability and accuracy of modern precision weapons. The dynamic nature of the battlespace further exacerbated the situation. Coalition ground forces maintained constant, close contact with the enemy from the first day of the war. To support the ground scheme of maneuver, CENTAF planners continually changed preplanned targets and scheduled on-call missions that launched without such targets. Since we had no effective automated system or process to fully track the hundreds of changed targets or those attacked by on-call missions, members of the CENTAF assessment staff became overwhelmed early in the war when they attempted to track missions manually—the first step in assessment. BDA production immediately fell behind and never fully recovered. Therefore, an automated air-mission tracker system that autopopulates the assessment database with mission-related data by communicating machine-to-machine with weapons and sensor platforms is essential to the conduct of efficient and timely BDA.

This type of system will also help alleviate the BDA-collection issue. However, it will not completely solve it since we cannot preplan and task collections for these dynamic missions. Current methods and capabilities will never be effective for a war like Iraqi Freedom. Obviously, we need to explore and develop other approaches to gather postattack information, including self-assessing weapons, platforms not typically associated with assembling postattack data, and sensors other than those used for electro-optical imaging. Following an attack, after mission-related data from sensor platforms is parsed into the assessment database—*independent* of method or platform—and autocorrelated with the air-to-ground, mission-related data, BDA analysts can “pull,” fuse, and exploit collected data on high-priority targets. This procedure has the added benefit of giving planners and targeting personnel better situational awareness of attacked targets, making ongoing planning more effective.

Another automated-assessment solution involves computer-modeling entire target systems. Most combatant commands and supporting intelligence agencies produce some type of analysis product used to model such systems with software-application tools already developed by the military and private industry. Modeling can provide better insight into the location of critical nodes and vulnerabilities, making predictive-effects analysis a reality and target selection more effective. Relying on analysts’

interpretations of these nodes and vulnerabilities, the models could run simulated missions and packages based on documented weapons effects to predict the operational-level cumulative and cascading effects of air operations across the theater. These models could also come into play after a day's worth of dynamic missions, involving aircraft launching with no preplanned targets, to provide at least a basic assessment of how well the missions cumulatively met operational-level objectives. Of course, this depends upon knowing the location of all mission taskings in the first place, which, as mentioned previously, requires automation. In the future, long-term assessment will compare how well the computer model predicted actual tactical, operational, and strategic effects, thus producing more reliable data points that we can use to correct the models and make them more accurate. Conceivably, a computer-modeled predictive assessment may represent the only short-term appraisal available in the integrated, hyperoperations-tempo battlespace of the future. Having some sort of measured, near-real-time, operational predictive assessment is better than no assessment at all (usually the case under the current paradigm).

We have always had concerns about education and training in BDA. Since this type of assessment occurs only in wartime, peacetime training is usually nonexistent or sporadic at best. During most peacetime training, BDA-related reporting follows a script, and dissemination occurs in near real time so the event doesn't get bogged down while we wait on the report. Additionally, we make no attempt to do analytical-assessment training since, routinely, an experienced control group performs assessment to keep the event moving and focused on the primary learning objectives, which typically don't include BDA. This scenario tends to create unrealistic expectations in the minds of commanders as well as the planning and execution staffs. More realistically, BDA scripting for war games and exercises should make the commander realize that in-depth assessment will not be timely and that short-term assessment, depending on the commander's time constraints, may not be wholly complete or accurate. However, in a time crunch, analysts must learn the importance of making the best assessment possible, based on the limited information available—and commanders need to know this.

We should make these principles major learning objectives of both war games and exercises. Furthermore, we should incorporate tactical- and operational-assessment analysis, including weapons-effects training, into continuation training for intelligence-production centers tasked with producing wartime assessments—and then we should evaluate such training during inspections. Doing so will force leaders in the chain of command to ensure that their personnel have the proper time, tools, and education to fulfill a primary wartime task. In the hyperoperations-tempo battlespace of the future, long-term, in-depth assessment may have no relevance to commanders by the time they receive it, since operations probably will have moved on. However, intelligence-production centers

should prepare themselves to carry out this task since we will still need long-term, in-depth assessment at the conclusion of operations or in the event that they stall.

Iraqi Freedom moved too fast and furiously for our cumbersome assessment paradigm, currently based on an attrition-based mind-set, stressing the entire cycle to its breaking point. Combatant commands and their assigned functional components should face the fact that our assessment doctrine, tactics, techniques, and procedures need an effects-based, technology-enabled revision to go along with effects-based planning and execution. Since no one has ever deemed BDA particularly successful, we have no “best practices” to emulate and record in doctrine. While we still have time before the next crisis and while the problem has the attention of senior military leaders, we should move immediately to change the current BDA paradigm, in accordance with the type of warfare waged in Operation Iraqi Freedom. In the next war, every assessment could become crucial since America might not enjoy the asymmetric advantages of air superiority and seemingly unlimited stockpiles of precision weapons. By developing new assessment processes in doctrine, leveraging automation, creating innovative predictive-modeling tools, and providing accountable education and training, we can provide the boss with more timely, actionable effects-based assessments. The key word here is *actionable*. If the current assessment paradigm produces nonactionable assessments, then it is obsolete and of no use to the twenty-first-century war fighter who will operate in a time-compressed, hyperoperations-tempo battlespace. □

Washington, DC

Note

1. Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 12 April 2001 (as amended through 9 June 2004), defines BDA as “the timely and accurate estimate of damage resulting from the application of military force, either lethal or non-lethal, against a predetermined objective” (63). This article uses *BDA*, the common designation for *assessment*, interchangeably with the latter term.



Features

The Tale of the C/JFACC A Long and Winding Road

DR. STEPHEN O. FOUGHT

***Editorial Abstract:** Although the Royal Air Force and US Air Force followed different paths, they reached similar conclusions about how best to command and control airpower. The British service settled the issue early, but the American air arm had to resolve internal debates along the way. Dr. Fought describes how both air forces concluded that expeditionary air forces and a lash-up of the combined/joint force air component commander and combined air operations center provided the right structure.*



THE RELATIONSHIP BETWEEN the United States and British military forces endures as one of the most visible elements of a long-standing bond between the two countries. Whether this comes from a common heritage, a reasonably common language, or the fact that our two nations have fought alongside each other in all of the major wars of this and the last century, the net result is a well-developed linkage, forged from a number of shared understandings and based on mutual trust and respect. This article explores that linkage with regard to the air forces of each country, especially as manifested in today's concept of the combined/joint force air component commander (C/JFACC).

The question under examination asks how both the British and Americans determined that central command of air was viable and how they made that finding acceptable to asso-

ciated organizations that possessed air forces. This approach, therefore, looks at problems that arose in managing organizational change during the evolution of service and joint doctrine by focusing on the various pulls and tugs among the players as they sought to bring unity of effort and unity of command to airpower.

Since organizational change serves as the guiding principle of this article, one should briefly discuss that framework. Such change may prove the most difficult task for senior leadership. A mature organization—a bureaucracy with established operational procedures—develops a kind of inertia that causes it to do what it has always done, often without regard to the responsiveness of that behavior to a new situation. A combination of three factors usually precipitates organizational change: (1) looming disaster, especially one accompanied by a shortage of resources (this scenario sometimes forces individuals to set aside orga-



nizational [political] differences, albeit only temporarily); (2) abject failure, if it is recognized and admitted internally (unfortunately, all too often those who could influence change from within the organization do not recognize that failure has occurred); and (3) a powerful outside force, capable of forcing internal change by strength of personality, quantity of resources, or other mechanisms. All of these aspects will play out in the long and winding trail that leads to the modern-day C/JFACC.

World War I and the Interwar Years

The tale begins by noting that the US Air Force (USAF) and Royal Air Force (RAF) sprang from different roots and matured on opposite sides of the world under different circumstances. The British had the gift of pre-science, and the RAF leadership demonstrated its skill in organizational survival. Their foresight is obvious: the founding of the RAF marked “the first time an Air Force had been created anywhere in the world with the intention of conducting air war without reference or subordination to Army or Navy command.”¹ British leadership proved equally impressive: even though the RAF was “created with the aim of the strategic bombing of Germany,” Air Marshal Hugh Trenchard, the first RAF chief of staff, brilliantly kept the fledgling service out of an internal squabble with the British Army, holding it tightly to the close air support (CAS) mission while he changed the essence of the organization from a defensive to an offensive force.² Because of Trenchard’s genius, the RAF could spend its organizational energies and political capital resolving the problems of operating with other nations’ air forces—the US Army Air Corps in particular.

On the US side of the pond, the air element of the armed forces remained embedded in the Army as the US Air Service, which performed briefly but well in World War I alongside its British counterparts. During the war, the Air Service found itself attached to lower-level units—a factor that presented a challenge in terms of unity of effort. In 1918 these air

units became groups (I Corps Observation Group in April, the 1st Pursuit Group in May, and then a next-higher level called the American Expeditionary Forces [AEF]). By the end of that year, the AEF had 14 groups, including observation, pursuit, and two new bombardment units. Slowly but surely, unity of effort emerged through unity of command under the AEF.

Had the AEF remained extant after the war ended and had the Air Service redeployed to the States, one might have witnessed the genesis of an air organization along the lines of the RAF (i.e., an independent air arm) and, eventually, a full-fledged, unified/consolidated command and control capability. However, US forces demobilized after the war (as did the British); for the Air Service, this process meant reabsorption into the lower ranks of the Army and the partitioning of air assets among the nine standing Army corps.

For the next 10 years, little changed in terms of unity of command/effort for the Air Service except its name, when the air arm became the Air Corps in 1926. By 1942 a series of gradual changes within the Army effected a restructuring in the War Department to accommodate three Army commands—Ground, Service/Supply, and Air. At the same time, naval air remained part of the Department of the Navy. The United States entered World War II with this arrangement, and the unity of command/effort issues that surfaced in each theater would frame the debate over airpower for the next 50 years.

World War II: The Pacific Theater

In the European theater, the organizational problem took the form of creating a CFACC (i.e., learning to work with air forces of other nations), and in the Pacific, was dominated by the problems of creating a JFACC (i.e., getting US air to operate in concert). Of the two theaters, the Pacific provides the richer set of cases for describing the difficulties the United States experienced in achieving the same degree of success in terms of organizational design that the British enjoyed from the out-

set. The Pacific theater, therefore, serves as a useful basis for examining the organizational change that led to an independent Air Force and, eventually, to the watershed Goldwater-Nichols legislation that codified “jointness.”

The United States entered (and exited) World War II—in particular, the Pacific theater—with its services holding three distinct views of airpower. Considering airpower integral to naval operations, the Navy maintained that air should remain under the purview of the fleet commanders. Further, given the mobility of naval forces, naval air should follow suit (i.e., it should not be tied to a particular land campaign or be subjugated to a ground commander). The Army’s view of airpower mirrored the Navy’s: since air supported ground operations, a ground commander should control it. Within the Navy, the Marine Corps had taken exception to the Navy’s concept of operations from the outset; indeed, after the experience at Guadalcanal (see below), the Corps would have a dedicated air arm for the foreseeable future. Members of the Air Corps, of course, took a different view—opting for an air arm independent of land and sea forces, with unity of command determining the unity of effort for the air campaign. In addition to these perspectives, three other factors complicated the use of airpower in the Pacific: (1) the division of forces (air forces in particular) between Adm Chester Nimitz, commander in chief of the US Pacific Fleet and Pacific Ocean Area, and those of Gen Douglas MacArthur, commander in chief of the Southwest Pacific Area; (2) the division of air forces between the Navy and Army; and (3) a lack of either training or doctrine from which one could build a learning curve, leaving joint air operations in the realm of the ad hoc.

Stung badly at Pearl Harbor and short on combat resources, Admiral Nimitz marshaled his forces around the Midway Islands to meet and, hopefully, beat the next wave of Japanese attacks. By coincidence, he controlled two major air organizations—the fleet (at sea) assets under the immediate command of Adm Frank Jack Fletcher (*USS Yorktown* and *USS Enterprise*) and a grab bag of Marine, Navy, and

Army air assets ashore at Midway under Capt Cyril T. Simard (commanding officer of Naval Air Station Midway). Most of the robust collection of literature on the Battle for Midway indicates that the two air components (land and sea) could not coordinate their efforts.³ The question of whether or not better organization, planning, and training would have made a difference is moot. The simple fact is that the air assets were in place to achieve some sort of unity of effort, but no mechanism existed for causing the pieces to move together in an orchestrated manner (air and sea-based forces) or even for exploiting relative advantages among the land-based forces. As a result, the three air elements fought as three independent—although deconflicted—forces. On the positive side, deconfliction represented an important first step, and the United States earned a dramatic victory.

In the Solomon Islands, Vice Adm Robert L. Ghormley commanded three task forces—two afloat and one ashore.⁴ This lash-up, especially with its unfortunate geographical proximity to MacArthur’s forces, set out a dual challenge for Ghormley: coordination of his own land- and sea-based air forces and coordination between theater commands. Withdrawal of the carriers from Guadalcanal at D+2, leaving marines ashore with no air cover for nearly two weeks, except for the far-distant aircraft based in the New Hebrides, exacerbated the problem. The Marine Corps has never forgotten this. The air forces that would eventually arrive at Guadalcanal were a mix of Marine and Army Air Forces (AAF) fighter- and dive-bombers, eventually known as ComAirCactus, commanded by Gen Roy S. Geiger, USMC, with headquarters in the New Hebrides. These forces operated ashore at Guadalcanal, reporting to both Adm John S. McCain (for air) and Gen Alexander A. Vandegrift (as a marine in the Solomons). Perhaps surprisingly, it worked reasonably well from the outset and provided partial relief to the crisis situation at Guadalcanal. As the war proceeded, the original ComAirCactus concept managed to adapt its organizational structure and operational approaches.⁵

Although beyond the scope of this article, the story of the Solomons is (as before) worth telling and knowing, especially how ComAir-Cactus morphed into ComAirSols; how its command alternated among marines, naval aviators, and AAF Airmen; and how the AAF viewed being under the command of Navy or Marine aviation. ComAirSols laid the foundation for resolving unity of command/effort because it established a single commander for air who could direct a considerable level of effort toward the broader (theater) campaign. Further, the position of single air commander was not a function of the service-of-origin but was accepted by the combatant commanders.⁶

Unfortunately, the lessons provided and the framework offered by ComAirSols vanished at the end of the war. When the United States began its traditional demobilization, the armed forces returned to their usual battle over the budget, but this time the United States added a competitor (a new service—the Air Force) at a time when resources were shrinking dramatically.⁷ The roles, missions, and budget battles that ensued, especially over aviation assets, would plague US war-fighting efforts for the next 40 years as each service with air assets sought to engrain and protect its own view of airpower. One can again divide the US side of the story on unity of command/effort for airpower into two parts: the Cold War and a string of “hot” wars (a couple of them, once again, in the Pacific theater).

Korean War

At the outset of the Korean War, a single commander—Lt Gen George E. Stratemeyer, USAF—had responsibility for air (since only the USAF was available). However, within a month, naval air—under Vice Adm C. Turner Joy, as MacArthur’s commander of Naval Forces Far East, which included the US Seventh Fleet—entered the fray. Joy resisted incorporation under Stratemeyer, insisting instead upon a separate area for naval air, arguing the possibility that other events requiring the use of Navy forces in the Pacific made this arrangement necessary. They reached a degree of

compromise, however, by coining the new term *coordination control* and by creating a new organization—the joint operations center (JOC). Unfortunately, the term *coordination* was not compelling, leaving the services free to offer up for “coordination” whatever excess sorties existed and to accept as “coordinated” those sorties they wished to fly in the first place. Problems with the arrangements for air were further compounded over differences in the services’ approach to CAS and as the Marine Corps (with its memories of Guadalcanal) entered the war (the Marines provided air to the JOC only when the Corps’ assets clearly exceeded Marine requirements).

Nonetheless, the JOC matured over time. Initially formed to address the problem of coordinating the efforts of Fifth Air Force and Eighth Army, the JOC would eventually “manage” (an intentionally vague term) the air assets of each service by giving naval air a choice of targets; the Marines, as mentioned above, offered air to the JOC when it became available. This arrangement allowed each of the services to operate under its concept of the use of air with some modicum of deconfliction—but it clearly fell well short of applying air in an integrated or synergistic manner to the ground campaign or having a single ground commander control it.

As in the Solomons, necessity and crisis created the opportunity for innovation. Following the massive Chinese assault in late 1950, one would have expected the war-fighting organizations to find a way to put differences aside and work together on the issue of scarce resources (air assets). Such was the case with respect to unity of effort but not unity of command. Indeed, operational necessity dictated that the Navy dispatch an officer to the JOC to coordinate air actions and to select targets for naval aviation (still under Navy control). The Navy officer in the JOC, however, did not have the authority to commit naval assets—only to relay requests back to the fleet for resolution. On the other side of the coin, Marine air (ashore) worked fairly smoothly at the operational level, with Marine air tasked

(daily) through an annex to the Fifth Air Force frag order.

Though a reasonable idea, the JOC eventually fell victim to service cultures. Even under the utmost strain, the JOC simply served as a coordinating organization. The most severe difficulties occurred between the Navy and the Air Force, the Navy stubbornly holding to its position that naval air served a higher priority in the theater than the ongoing war and the Air Force (equally stubbornly) arguing that only a single (USAF) air commander could effectively employ air assets during the war effort.

Vietnam War

From 1965 forward, the US effort in Vietnam ramped up sharply. With respect to our themes of unity of effort/command for air-power, the war represents a dismal failure to unite under either banner. Indeed, the war was a conglomeration of internal battles: over CAS and rotary-wing aircraft among the Air Force, Army, and Marines; over strategy, target selection, and overall priorities among Military Assistance Command, Vietnam (MACV), Commander in Chief, Pacific (CINCPAC), and the White House; over operational and tactical control between Strategic Air Command (SAC) and Tactical Air Command (TAC) (manifested as a running duel between Seventh Air Force in-theater, charged with prosecuting the air war, and Eighth Air Force in Guam, which exercised control over the B-52s through Headquarters SAC at Offutt AFB, Nebraska, with no control by Seventh Air Force); and over "strike" between the USAF and the Navy. To paraphrase our cartoon friend Pogo, "We had met the enemy, and he was us."

Compromises allowed each participant to preserve its mode of operation in lieu of creating solutions that better accomplished mission objectives. Along the lines of the Korean War's coordination control emerged the concept of *mission direction*—a term no better defined than the earlier one. Predictably, the results proved equally poor. At best, the USAF and Navy achieved a modicum of deconfliction through the route-package (route-pack) system. In the

end, the war laid open the entire military apparatus for all to examine. The central argument in both cases concerned the combatant commander's lack of control over combat operations—but in particular the problems associated with having multiple air forces.

The period following Vietnam was punctuated with military and national-security-policy disasters, including the USS *Mayaguez*, Desert One, the loss of marines in Beirut, and the near-chaos (but mission success) in Grenada. Critics circled the Department of Defense (DOD) like vultures, some decrying the Air Force as the problem and claiming that the United States had not won a war since the creation of that service. Dr. Carl Builder, the dean of RAND scholars, noted in his book *The Icarus Syndrome* that the Air Force seemed to have lost its way—and certainly its culture—in the post-Vietnam period. Some, more rational, observers blamed "the system," in that the needs of the combatant commanders could only fall victim to interservice rivalries by virtue of the organizational structure within the DOD itself. In any case, out of these dol-drums came a powerful outside force—the Goldwater-Nichols legislation, which forced change upon the DOD (against the will of the services, according to some observers).

Goldwater-Nichols Act

The Goldwater-Nichols Department of Defense Reorganization Act of 1986 gave considerable power to the combatant commander, especially in terms of allowing him or her to organize and employ available forces.⁸ In theory, this gave commanders authority to resolve issues involving unity of command/effort—and it most certainly gave them independence from the service chiefs and, consequently, service rivalries in favor of conducting the joint fight. Furthermore, the act gave the Joint Chiefs of Staff responsibility to develop joint doctrine—a level of thought intended to reside above service doctrine and one that would define the joint war fight.

For the Air Force, Goldwater-Nichols presented a combined threat and opportunity in



the same bundle. On the one hand, increasing the power of the combatant commander, traditionally from the Army or Navy (the former a doctrine-oriented service), could have relegated the Air Force to a subservient role. On the other hand, the act invited the Air Force to come up quickly with a new command concept—the JFACC—around which the service could develop its ideas for unity of command/effort on the same tier as naval and ground forces. To the betterment of all, opportunity overcame threat, and the Goldwater-Nichols legislation moved the US armed services down a path toward jointness.

As US armed forces performed their various organizational minuets, our British colleagues entered a period during which they too appreciated the need for change. Elsewhere in this issue, Wing Cdr Redvers T. N. Thompson, RAF, argues that during the Cold War the forces of the United Kingdom (UK) had become too focused on the North Atlantic Treaty Organization (NATO) scenario and, with respect to the RAF, too dependent on main operating bases. Operation Desert Storm generated a full realization of the need for change and caused the term *expeditionary* to reenter the RAF vocabulary. In turn, UK forces opted for a Permanent Joint Force Headquarters, within which the RAF would opt for a US-like model for command and control (the JFACC); this, in turn, would lead to the RAF's developing a fully trained battle staff and organizational process—the joint air operations center (JAOC)—to implement the air portion of a joint operation.⁹ In the meantime, we rejoin the story of how the United States managed to orchestrate the changes directed and facilitated by Goldwater-Nichols.

Gulf War of 1991

The first real test of the combatant commanders' new authority, in terms of resolving airpower disputes, came in Operations Desert Shield and Desert Storm. As Dr. Ben Lambeth notes in *The Transformation of American Air Power*,

Desert Storm finally saw a vindication of the "single-manager" concept for the command and control of airpower. The success of the JFACC approach came close to capturing the essence of . . . centralized coordination of all air assets under the control of an autonomous air force command, freed of its dependency on the army. . . .

. . . All of the services accepted, at least in principle, the need for a single jurisdiction over allied airpower in Desert Storm.¹⁰

Although the concept worked imperfectly, it worked well.¹¹ Perhaps even more importantly, a broad spectrum of the service leadership accepted the idea of unity of command/effort, all with an eye toward meeting the joint force commander's (JFC) objectives. According to Lambeth,

As General [Merrill A.] McPeak [chief of staff of the Air Force] was quick to note after the shooting stopped, [Gen H. Norman] Schwarzkopf as the CINC set the cadence of coalition operations, and all of the pieces of the war plan were "his concept, including the air piece." . . . As early as November Schwarzkopf was clear about his blessing of the JFACC concept and who had final authority for making air tasking decisions. He instructed his division commanders, "There's only going to be one guy in charge of the air: [Gen Charles A.] Horner. If you want to fight the interservice battles, do it after the war."

Drawing from Williamson Murray's work *Air War in the Persian Gulf*, Dr. Lambeth adds one other extremely important point: "Even army generals like Schwarzkopf and [Gen Colin] Powell were looking for broader applications of air power than just supporting 'the ground commander's scheme of maneuver.'"¹²

Frames of Reference

Force application had moved from the days of independent air and ground/naval operations, through a period when deconfliction was the best that one could hope for, and on to a point where integration became possible on a regular basis. In the process, airpower (and space power) began to hold its own and, quite possibly, become the mechanism for true syn-

ergy—the shining hope of joint warfare. In order to achieve this level of capability, both the Air Force and the joint community had to create some new frames of reference.

In the joint community, the frame of reference was effects-based operations (EBO). Placing the JFC's guidance in terms of creating certain effects dramatically changes the dialogue between the JFC and political leaders and between the JFC and subordinate commanders. The change becomes far more significant than taking targeting and weaponeering out of the hands of the politicians (as some people have suggested). Because EBO is a broad statement of intent (rather than a specific choice of method), it actually increases the number of options a JFC might present to the political leadership. Going in the other direction, when a JFC communicates via EBO to subordinate commanders, the participants can debate the air, ground, and naval approaches on a level playing field directly related to the mission (i.e., not service parochialisms). EBO is powerful stuff and probably key to the synergy of joint forces; thus, it is extremely important to the application of airpower.

The second frame of reference entailed the Air Force's finding a more flexible mechanism for commanding and controlling its forces than the mechanical air tasking order (ATO) process that mindlessly (some say unresponsively) serviced an infinite target list with a finite set of resources. The "push CAS" system developed by General Horner during Desert Storm was certainly a start, as was the "Black Hole," but the more robust, more accessible air operations center (AOC) concept, which developed after the war, fleshed out the process.

Finally, the Air Force had to settle its internal differences between SAC and TAC, a struggle that colored the service's contributions to more serious dialogue with respect to joint warfare. By the time the Cold War ended, whatever differences that existed between strategic and tactical airpower had vanished: throughout the hot conflicts of the Cold War, strategic aircraft bombed tactical targets, and tactical events had strategic consequences—

despite what advocates from each command espoused. When General McPeak took down SAC and TAC in one blow, replacing them with Air Combat Command (ACC), he did the Air Force a service and set in concrete an institutional structure that could finally concentrate on warfare in all its dimensions. Moreover, subsequent USAF leaders could begin to develop an expeditionary air force structure—a design more suited to the needs of a post-Desert Storm world.

In conjunction with the changes just discussed, the United States took the opportunity after Desert Storm to create a new organization. Beginning in 1993 and using the organizational landscape of NATO's Atlantic Command (a Cold War creation comprised of Navy and Marine Corps forces), assets of the Army (Forces Command) and Air Force (ACC) merged with those of the Navy (Atlantic Fleet) and Marine Corps (Marine Forces Atlantic) under Atlantic Command. Further, the command was charged with training, integrating, and providing forces worldwide—the first US-based force to have that responsibility (a force logically parallel to the United Kingdom's new Permanent Joint Headquarters). Atlantic Command became Joint Forces Command (JFCOM) in 1999—the only unified command with both geographic (closely aligned to NATO) and functional responsibilities, the latter being "transformation" and experimentation.

The loop was now complete—there existed a forged concept of operations (EBO), a mechanism (AOC), and an organizational structure (JFCOM/ACC) through which airpower could merge into the joint fight on an equal footing with land and sea warfare. Perhaps coincidentally (but perhaps not) the two great air powers—the United States and the United Kingdom—reached the same conclusions, albeit via different paths.

Implications and Conclusions

At this point, it is reasonable to propose that airpower had run the gamut of attempts at organizational change and had finally



become institutionalized. The seeds planted by Billy Mitchell and others at the beginning of the century, which grew so naturally in the United Kingdom under the care of Air Marshal Trenchard, had finally taken root in the United States. They first sprouted in the Solomons, in the face of a looming disaster and shortage of resources, but withered in the drought of demobilization. Over time, culminating in the abject failure of Vietnam, even airpower advocates admitted that something was terribly wrong—with the US military structure and most certainly with airpower. Then a powerful outside force, through the instrument of the Goldwater-Nichols legislation, forced change. The world saw the net result in the joint warfare of Operations Enduring Freedom and Iraqi Freedom—and it was awesome.

In the end, having traveled a long and winding road to achieving unity of command/effort for airpower, the Air Force has three responsibilities on the horizon—three major-league tasks that will prove crucial to institutionalizing these hard-fought changes. First, the mechanical aspects of the C/JAOC have to work. Second, we must populate the C/JAOC with well-trained individuals who are properly organized, trained, and equipped (and attuned) to the JFC's requirements. Finally, we must share the C/JAOC with our joint/alliance partners.

Mechanics

If EBO is the framework for synergy at the JFC level and if the AOC (C/JAOC) is the Air Force's method of achieving unity of command/effort, then assessment is the linchpin that keeps the mechanisms moving together. Otherwise the system comes apart, and the C/JAOC defaults to the earlier ATO system of mindlessly servicing an endless target list with a finite set of resources. The crux is that assessment of EBO is very difficult—wholly different than the traditional problem of conducting battle damage assessment (BDA). BDA is a static measure taken instantaneously (e.g., photo recce, etc.); either a target is damaged (to a specified degree) or it is not. As a dynamic process, EBO lends itself better to trend

analysis (i.e., measurement and evaluation over time). Further, it is likely to be multidimensional. Unlike observing craters, collapsed areas, or other damage following attack on a revetment or runway, evaluating effects involves a wide range of considerations. The latter include whether or not military operations have succeeded in eliminating (or reducing) an adversary's ability to maintain the support of the army, the relative cohesion of local political leaders, or even the continuity of the internal power grid. The bottom line is that we must channel much intellectual energy into figuring out how to conduct assessment in order to keep the C/JAOC cycle moving.

Organizing, Training, and Equipping

If airpower and the JFC's plan do in fact come together in the C/JAOC, then it is a place for polished professionals—it is not a pickup game. The RAF has wisely recognized and acted upon this fact, and the USAF cannot afford to let it languish, even though taking the proper steps will prove very difficult for a service already feeling the stressful effects of personnel tempo. The ongoing dialogue on reshaping the numbered air forces holds promise, but no matter how many ways one arranges the beans, there are still only so many beans. Counting them isn't much fun for a bunch of pilots, but at some point they have to do it to see if there are enough to fill the task jars sitting on the shelf.

Sharing the Wealth

Finally, if the AOC (C/JAOC) is the key to commanding and controlling airpower, then will the USAF allow members of another service to command it? In short, does the C/JAOC belong to the JFACC or the commander, Air Force forces (COMAFFOR)? Once again, our British friends seem to have thought this out and arrived at the right answer: their JFACC headquarters, including the JAOC, would be assigned under the Permanent Joint Headquarters. However, as it stands now in the United States, the relationship remains unclear. Certainly, though, when a USAF Airman serves

as the JFACC, then he or she commands independent staffs to support COMAFFOR and JFACC duties. But if, say, a marine is designated as the JFACC, would the C/JAOC be brought up for that marine's use? One hopes that is the case, but both joint doctrine and Air Force doctrine need to make that clear.

We now return to the original proposition that the relationship between the British and American armed forces (in particular, that between the RAF and USAF) is special and why this is so. In the case of the air forces, the two nations have faced similar questions with respect to achieving unity of command and unity of effort. The RAF came up with the right answers, and it stuck to its positions. The

USAF fought internal battles, some of legionary proportions, eventually arriving at the same answers.

In the post-Cold War era, both face the problem of building expeditionary air forces. Therefore, it should come as no surprise that both nations have reached the conclusion that the C/JFACC concept and the accompanying J/AOC mechanism represent the right way to go. Now, having reached the same conclusion, they have an obligation to make it stick—and that means resources. After all, to paraphrase a central point made by Commander Thompson in his article, "A vision without resources is an illusion." The time has come to press the question of resources. □

Notes

1. See "13 May 1918," *RAF History Timeline: 1780 to 1918 Overview*, <http://www.raf.mod.uk/history/line1780.html>.

2. Ibid.

3. One finds many possible reasons for this lack of coordination, including problems with operations security, a lack of training, and a general unfamiliarity with each other's operations. Whatever the reasons, the land-based air assets launched (on 4 June) in order to survive the Japanese attack; once launched, aircraft characteristics (range, payload, etc.) determined their operational use. In contrast, the sea-based assets fought a more conventional air-naval battle based on the enemy's known position. Within the land element, Army, Navy, and Marine air fought according to those services' own doctrines, against targets appropriate to their operating procedures.

4. Task Force 61 had three carriers; Task Force 62 consisted of an amphibious force with marines embarked; and Task Force 63 included land-based US Navy, Marine, and Army air forces alongside Royal New Zealand air forces.

5. An axiom of organizational decision making under pressure (crisis) holds that professionals usually find a way to make things work, in spite of the organizational structure. Said another way (more appropriate to combat ops), it's time to put aside pettiness when you're getting your backside shot off. Find time to fight each other later (and they did).

6. A considerable amount of literature covers the air war in the Pacific and the associated command and control issues. The point of reference for the discussions here is James A. Winnefeld and Dana J. Johnson's *Joint Air Operations: Pursuit of Unity in Command and Control, 1942–1991* (Annapolis: Naval Institute Press, 1993).

7. A "powerful outside force" (i.e., Congress) generated this change with the Defense Reorganization Act of 1947. However, as with any sort of organizational change, it encountered resistance—at the outset, in terms of the

frame of reference (the legislation), and after the legislation passed, in terms of implementation. Even more interesting, a battle ensued within the new Air Force between fighter and bomber advocates. This issue may never see total resolution, but at least it reached a partial one with the creation of Air Combat Command in the early 1990s.

8. In addition to the authority to organize and direct forces, Goldwater-Nichols imbued combatant commanders with a more forceful voice in the resource-allocation process, implemented through the Joint Requirements Oversight Council. Equally important, it implemented a long-term program for joint education (joint professional military education [JPME]) and a structure for adding joint experience (the joint service officer positions), all of which combined to become wickets through which officers had to pass on their way to promotion to general or admiral. Although some services resisted these moves, they institutionalized jointness across the spectrum of service activities.

9. Readers should study Commander Thompson's article in detail, paying particular attention to the RAF's decision to permanently staff and train a JFACC headquarters instead of just a J/AOC. Once again, this issue illustrates the prescience of our British colleagues; we Americans would do well to follow suit.

10. Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, NY: Cornell University Press, 2000), 130.

11. One certainly encountered a number of implementation issues. For instance the daily air tasking order had to be flown out to the fleet since compatible communications did not exist. However, these sorts of issues, although ugly and difficult to manage, do not refute the value of the overall concept of a JFACC and an AOC.

12. Lambeth, *Transformation of American Air Power*, 132–33; and Williamson Murray, *Air War in the Persian Gulf* (Baltimore: Nautical & Aviation Publishing Co. of America, 1995).



Aspects of Anglo-US Co-operation in the Air in the First World War

SEBASTIAN COX

Editorial Abstract: The United States Army entered the First World War with an air service of just over 1,000 men and 200 aircraft, not one of which was suitable for combat. US officers quickly recognised that their new Allies possessed a wealth of resources and experience which could be of great benefit to America's Airmen. This article recounts the early steps in what was to become a long and continuing history of Anglo-American air power co-operation in the First World War.

THE HISTORY OF co-operation between Airmen of the British and American air services in the First World War falls very broadly into three categories: training and combat operations, theory and doctrine, and production. As latecomers both to the war itself and to the organisation and operation of air forces on a large scale, the Americans were anxious to benefit from the hard-won lessons and experience of their British and French Allies. On entering the war, the United States had only 130 officers and some 1,000 enlisted men in its aviation service, together with 200 aircraft, not one of which could be deemed suitable

for combat.¹ By September of 1917, Gen John "Blackjack" Pershing was already planning an air service of 260 frontline squadrons by 30 June 1919.² If the United States was to build an effective air arm of this size, it was obvious to American officers that they should seek to obtain the maximum benefit not only from their Allies' firsthand experience of war, but also from their military organisations themselves. In addition, of course, some spirited Americans had entered the service of the Allies before the US declaration of war in April 1917. The most famous of these served with the Lafayette Escadrille of the French Air Service, but others, as we shall see, had made

their way across the Canadian border and found their way into the British Royal Flying Corps (RFC).

An organisation of the small size of the US aviation section clearly could not expand, using its own resources rapidly enough to produce an air arm of sufficient size to meet US wartime requirements, without drawing on the already large and well-established resources of its Allies. Furthermore, as the Americans had no aircraft suitable for war, they were also going to rely on their Allies to a large degree for materiel, and this gave further impetus to the need to train US personnel not only to fly, but also to maintain foreign equipment. While Americans made strenuous efforts to develop training programmes and facilities in the continental United States, including co-operative efforts with industry, these were never going to be sufficient to support the rapid expansion and were always hampered by lack of equipment and instructors. In these circumstances, US officers turned to their Allies for assistance. In Britain's case, this took various forms, but one of the earliest initiatives came from a remarkable British officer—Lt Col (later Brig Gen) Cuthbert Hoare, commander of the RFC in Canada at the time. Remarkably, Hoare, despite the title of his organisation and its location in Canada, reported not to the Canadian government but to the War Office in London. Hoare did not run a *Canadian* RFC but was, in effect, operating an entirely autonomous British military organisation in another nation, and although the Canadian government gave him its co-operation and support and was in turn kept abreast of his activities, it did not exercise any real control over these activities. With an officer less able or less diplomatic than Hoare, national sensibilities and the sometimes prickly independence, which unthinking British officers could all too readily ignite in Dominion nations, might well have created friction and conflict. Hoare's remit was to establish 20 training units in Canada, with their supporting organisation, in order to provide a steady stream of manpower for the British frontline Air Service. His organisation was to recruit the personnel

and give them initial ground training and basic flying instruction. They would then be sent to Britain to complete their training before moving on to combat units.³

As the Canadian official historian has commented, "The key to the success or failure of RFC Canada lay in recruiting."⁴ Hoare had always sought to recruit Americans into the RFC even before US entry into the war, but US legislation, notably the Foreign Enlistment Act of 1818, prevented recruitment on US soil, and potential recruits had to be enticed across the Canadian border if they were to join up. More remarkable still, however, were his actions *after* the US declaration of war. On the face of it, the United States' entry into the war threatened to turn off the flow of US recruits for Hoare's scheme since patriotic Americans might reasonably be expected to enlist in their own nation's air service to fight the war rather than that of an Allied country. Such was not the case, however, and Hoare successfully continued to recruit Americans. The seeds of his success were sown when the United States entered the war and the British ambassador in Washington asked him to meet with US officers and officials to give them the benefit of his experience in military aviation. At this meeting, Hoare met Brig Gen George O. Squier, then the chief signal officer of the US Army, but more importantly the man with overall responsibility for the US Army's nascent air service. A number of initiatives flowed from this initial meeting. Subsequently, in May 1917, Squier visited Hoare in Canada and told him that the US Air Board would not object to the British opening a recruiting office in the United States. A British recruiting mission was established in New York, ostensibly to recruit British citizens resident in the United States. Hoare went one step further, however, and, working with the mission, opened an office on Fifth Avenue which actively, if quietly, sought to recruit Americans. Hoare himself was well aware of the tenuous nature of his operation. He told London in September 1917, "The situation is this: the British Recruiting Mission has given a written undertaking not to recruit American subjects; that I

can do so is entirely due to personal influence at Washington, and though I think I can carry it through, I cannot possibly give you a definite assurance." Eventually and inevitably, his activities drew the attention of others in Washington who were not so well disposed as Squier, and in February 1918, Hoare was forced by the State Department to cease his recruitment activities.⁵ The exact number of recruits enlisted via Hoare's unorthodox activities is unknown, but some 300 Airmen are believed to have entered the RFC through enlistment via Canada.⁶ We might legitimately ask why Squier would apparently so readily agree to suitable candidates for his own air service being "poached" by the British after the American entry into the war. The answer, in all probability, lies in the fact that Squier knew his own training organisation was inadequate and thought it better to have Americans trained to fight with the British than not to fight at all. He may have calculated that some at least would become available to the American service in due course, and in this he must have been encouraged by the fact that the British agreed to release five experienced US pilots from their own service and transfer them to the US Army, where they were promptly appointed as squadron commanders.⁷ Furthermore, through one route or another, between 900 and 1,100 Americans ultimately flew with the RFC. These men not only provided a very welcome influx of high-quality personnel to the British Air Service but ultimately proved of even more value to their homeland, since most of the survivors ultimately transferred to the US service, bringing with them a priceless injection of front-line experience.⁸

In addition, Squier did not come away from his meetings with Hoare fortified only by promises—far from it. A more obviously mutually beneficial, and thus more sustainable, agreement was also reached between the two men. Hoare had a problem in that the flying programme at many of his RFC Canada schools in Ontario could expect to be badly affected by the severe Canadian winter. In his visit to Hoare in May 1917, Squier had mentioned that

the military flying-training schools which were scheduled to open in the States were, unsurprisingly, very short of instructors and asked whether the RFC in Canada might offer any assistance. The imaginative Hoare immediately saw the possibility of an arrangement which would help both parties with their differing training problems. He told the War Office in London of his plan to train 100 US cadets during the summer of 1917 in exchange for facilities for a Canadian training wing (later increased to two wings) at a southern US training base, complete with machines, during the winter months, when the Canadian schools would be all but closed by the weather. Hoare's entrepreneurial spirit did not stop there, however, and he was soon scheming with American officers over cocktails at the Raleigh Hotel in Washington before appearing before the US Aircraft Production Board with a proposal for a far more ambitious reciprocal-training scheme. Under this scheme, the RFC agreed to train 300 pilots; 2,000 ground-crew members; and 20 equipment officers, all in addition to the original 100 pilots from the first agreement. The trained personnel would then be shipped to the United Kingdom (UK), where they would be issued with aircraft and equipment before proceeding to France, where they would come under the control of the RFC. The original agreement was to lapse in February, but it was extended to April, and the total number to be trained was now to be sufficient for 18 squadrons.⁹

Three US squadrons commenced training in Canada and transferred with the Canadians to three airfields (Benbrook, Hicks, and Everman Fields) at Camp Taliaferro, near Fort Worth, Texas, in the autumn of 1917. The Canadian cadets occupied Benbrook and Everman Fields while the US cadets and the Canadian aerial gunnery school went to Hicks.¹⁰ An outbreak of influenza and associated medical quarantine precautions meant that a proportion of the additional eight US squadrons never arrived before the Canadians left in April. Nevertheless, there is little doubt that the scheme was of great benefit to both the American and British Commonwealth air

forces. As a result of the Hoare/Squire agreements, by April 1918 some 4,800 personnel were trained for the US air arm. This total included 408 fully trained US pilots along with a further 50 who had been partially trained. Two thousand five hundred ground personnel, officers and men, had been fully trained, with a further 1,600 part way through their training.¹¹ The first American squadron left Texas for England on 19 December 1917 with its full complement of 25 pilots, and three more followed in each of the next three months, thus completing the original agreement to train 10 squadrons. The first squadron (17th Aero Squadron) transferred to France in early February 1918 and was attached by flights to frontline RFC squadrons to gain combat experience.¹² In addition, some 1,500 flight cadets had been trained for the British Commonwealth air services. The new chief of the United States Air Service informed Hoare that these programmes had "conferred great and practical benefit on the United States Air Service."¹³ The methods used in the Canadian gunnery school were subsequently in large part adopted by the US Air Service when it opened its own school at Ellington Field, Texas.¹⁴ Although the original agreement provided for 10 fully trained US squadrons to serve with the RFC/Royal Air Force (RAF) in Europe, this did not come to pass. Only two US Air Service squadrons—the 17th and 148th Aero Squadrons—saw active service with the British, flying with them until November 1918, when they were absorbed into the US Air Service. One other interesting fact is worth noting regarding the Canadian training scheme: the very first cadets to arrive in Canada for training were from the US Navy and not the Army, and 20 of them completed their entire training in Canada and did not therefore transfer to Fort Worth. Amongst this initial party of US Navy cadets was James Forrestal, later a distinguished secretary of the Navy and secretary of defense.¹⁵

The Hoare/Squier agreements were not the only mechanisms by which US personnel were trained by the British Commonwealth, with both pilots and ground-crew members being

trained in the United Kingdom. The Bolling Commission, led by Maj Raynal Bolling, was despatched from the United States to Europe in June 1917 to discuss US materiel and equipment needs, and Bolling discussed the training of American mechanics with the British during his visit.¹⁶ The first contingent of 53 men arrived at Liverpool in early September 1917, and others soon followed, including some diverted from France and Italy.¹⁷ The 34th Aero Squadron and detachments of 50 men from an initial seven squadrons, followed soon after by a further five flying squadrons, all landed on the shores of the United Kingdom. Eventually the demand became so great that a more formalised system was put in place, and in December 1917, the British signed a formal Mechanic Training Agreement which laid down that 15,000 US mechanics would be shipped across the Atlantic for training by 1 March 1918. The expectation was that the Americans would be trained more quickly than could be arranged in the United States and that they would enable a similar number of British mechanics to be released for service with the RFC in France. Once trained in the United Kingdom, the American mechanics would be released for service in American Expeditionary Force (AEF) units in France at the same rate that replacement trainees arrived in the United Kingdom from the United States. These expectations were never met, largely because the problem of shipping 15,000 men safely across the Atlantic was never satisfactorily resolved, and by 1 March only some 4,000 had arrived in the United Kingdom. Ultimately, however, the programme based in the United Kingdom trained 22,059 men, of whom very nearly half were sent on to frontline squadrons in France. In the words of one US historian, this programme "made an absolutely vital contribution to the development of Air Service, AEF, capability in France."¹⁸ The programme also proved of great benefit to the British—so much so that when the Americans, faced with a shortage of mechanics in France in May 1918, sought to post personnel from England, the British pointed out that under the terms

of the agreement, this could not be done before replacements had arrived in the pipeline from the United States. An American officer familiar with the workings of the programme wrote, "I am firmly convinced that if tomorrow the vast majority of American Squadrons were to be removed from England the Royal Air Force [in the United Kingdom] would be severely crippled and at certain stations their training would come to a complete standstill." Eventually the British agreed to the immediate release of 3,500 mechanics whom the United States would replace as soon as possible with further drafts from the States.¹⁹ The first five squadrons of trained personnel left the United Kingdom for France in June 1918, and there seems little doubt that this could not have been achieved through any purely US-based training programme.

If co-operative schemes with the British Commonwealth forces made a major contribution to the practical training of the US Air Service in the course of the war, the former made an equally important contribution to the intellectual development of the infant US air arm. William "Billy" Mitchell, a colonel at the time, was in the vanguard, both in terms of developing US air power thinking and in establishing links with influential practitioners in Europe. Mitchell came to Europe very soon after the US entry into the war and spent some days with the influential commander of the RFC in France, Sir Hugh Trenchard. When Mitchell sent two papers on air organization back to General Pershing's headquarters, he sent with them a copy of a memorandum by Trenchard of September 1916 on the primacy of the offensive in air warfare.²⁰ According to Trenchard's biographer, Mitchell met with Trenchard on several occasions during the summer of 1918 and even went so far as to ask the Briton to cast his experienced eye over Mitchell's tactical plan for the Saint-Mihiel offensive. Moreover, Trenchard gladly cooperated more directly in the offensive by acceding to Generalissimo Ferdinand Foch's request (undoubtedly prompted by Mitchell) to support the Americans with the bombers of his Independent Force.²¹ The Independent

Force was also formally tasked with supporting the Americans in the subsequent Meuse-Argonne offensive. In both instances, the main target of the British bombers was the rail networks supporting the German front, particularly in the area of Metz-Sablon.²²

Whilst the links between Mitchell and Trenchard resulted in some very obvious and direct co-operation and influence, there were other examples of British influence on US air power thinking which are generally less well known but in the longer run perhaps equally important. In particular, and in the light of the shared experience though divergent doctrines of the US Army Air Forces (USAAF) and the RAF in the Combined Bomber Offensive in the Second World War, it is of particular interest to note the way in which American doctrine relating to strategic air war against economic targets, so famously expressed in the Air Corps Tactical School's inter-war theorising, had its roots in British thinking from the First World War. In particular the influential 1917 expression of American strategic-bombardment doctrine expounded by Maj (later Col) Edgar Gorrell borrowed directly and extensively, though without acknowledgement, from the writings of Lord Tiverton, at the time an officer in the British Air Ministry. Gorrell was appointed as the chief of the Technical Section of the Air Service, AEF, in August 1917. He developed a strong interest in the concept of strategic bombardment and in November 1917 submitted a plan to the new chief of the Air Service, Brig Gen Benjamin Foulois, who approved the plan and made Gorrell head of "Strategical Aviation, Zone of Advance, AEF."²³ Gorrell's work relied so heavily on a similar plan written by Tiverton in early September that large parts of it were simply lifted verbatim. As US air power historian Tami Biddle has noted in her thoughtful work on American and British strategic air power, this was somewhat ironic since "what came to be known as the 'Gorrell Plan' was later considered paradigmatically American: the 'earliest' and 'clearest' statement of 'the American concept of air power.'"²⁴ Gorrell later wrote a further essay

entitled "The Future Role of American Bombardment Aviation," which drew not only on Tiverton, but also on a paper written by Trenchard in November 1917. In drawing so readily on these British influences, "Gorrell infused American air power thought with Tiverton's emphasis on analytical planning and systematic implementation, as well as Trenchard's emphasis on the moral effect of bombing."²⁵

In the event, neither Gorrell's plan nor other similar US doctrinal forays into the realm of strategic bombing came to very much during the course of the war. Although this was in part due to the influence of senior Army officers anxious to maintain the focus of the Air Service on tactical support of the Army, it was also in large part due to production difficulties. As we have seen, the United States did not enter the war with a single combat-ready aircraft type, and the Americans were perforce compelled to equip their squadrons with proven Allied types. This meant that of 6,364 aircraft delivered to the Air Service in France, 19 were of Italian origin, 258 came from Britain, and 4,874 from France. Only 1,213 were sent from the United States.²⁶ The attempts to produce Allied designs in the United States were not entirely successful. Hampered in part by the rapid developments in design—such that, for example, the de Havilland DH4 which was ordered in large quantities was already obsolete before entering production—and partly by the difficulty of producing highly complex aircraft designed elsewhere, much treasure, effort, and heartache were expended for surprisingly little tangible result. The most interesting of these attempts from the perspective of Anglo-American co-operation was the Handley Page twin-engine, long-range night bomber, which went into UK production in July 1917. Although the Italian Caproni heavy bomber appeared to possess better performance, there appeared to be technical and bureaucratic obstacles to its rapid production in the United States. Thus, the War Department plumped for the Handley Page design powered by American Liberty engines. Aware that no aircraft at that time was capable of flying the Atlantic, the plan was for US companies to build

prefabricated parts sufficient to build aircraft to equip 30 bomber squadrons. The prefabricated materials would then be transhipped to the United Kingdom, where they would be sent to assembly facilities in disused Lancashire cotton factories. An agreement to this effect was signed in January 1918.²⁷ In fact the British had sent a complete set of drawings for the Handley Page to the United States as early as August 1917. However, subsequent design changes meant that two further sets of drawings had to be sent, necessitating in some cases the scrapping or reworking of existing parts. As the Handley Page aircraft had more than 100,000 individual parts, this was a major undertaking, and the US subcontracting companies quickly fell behind schedule.²⁸ Although the assembly facilities and five training airfields in the United Kingdom were to be prepared by a small army of labourers sent from the United States, only about 60 per cent of the additional manpower arrived before the armistice. In addition, poor weather and labour conflicts with the British trade unions, which led to frequent strikes, further delayed the project. By the end of the war, only 50 engines and 95 per cent of the parts to complete 100 aircraft were available in the United Kingdom.²⁹ Thus, although the US Army had two squadrons of Handley Page night bombers in training in the United Kingdom on 11 November 1918, "not a single night-bomber manufactured in the United States during World War I reached the front."³⁰ Unfortunately, the one part of the programme which worked smoothly was the transfer of the several thousand men who were intended to maintain the aircraft. These unfortunates waited in vain in the United Kingdom for their charges to arrive. Henry "Hap" Arnold, a colonel at the time, was moved to comment that "the only result was that the American air outfits in France were deprived of their needed services."³¹

It would nevertheless be wrong to end this very brief and far from comprehensive survey on a downbeat note. The assistance given by the RAF and its predecessors in helping to establish American air power on a firm footing was more than repaid, both by the exploits of

American Airmen flying with the British Commonwealth forces and by the assistance given to the Canadian training programmes. The links that were established during the First World War, though they lay dormant for two decades, were very quickly reestablished during the second great conflict a generation later. Large numbers of UK Airmen were again trained in Canada, and once again as soon as America entered the war, training facilities were made available in Texas and other southern states. Yet again, free-spirited Americans, convinced that the cause was a just one, sought to join the RAF and Commonwealth air forces even before the United States entered the Second World War. Thus,

at least 12 US citizens flew with the RAF during the Battle of Britain, more than a year before Pearl Harbour, and by early 1941 the RAF was able to establish three fighter squadrons whose pilots were almost exclusively American. As with an earlier generation, most of these men subsequently transferred to the USAAF, where they were once more able to provide a leavening of experience which was of incalculable benefit to forces going into combat for the first time. These strong links have endured over subsequent generations and conflicts, but their foundations lie in the bonds established in the world's first truly global war of 1914–18. □

Notes

1. Tami Davis Biddle, *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas about Strategic Bombing, 1914–1945* (Princeton, NJ: Princeton University Press, 2002), 50.
2. Rebecca Hancock Cameron, *Training to Fly: Military Flight Training, 1907–1945* (Washington, DC: Air Force History and Museums Program, 1999), 143.
3. On Hoare and the establishment of the Royal Flying Corps in Canada, see S. F. Wise, *Canadian Airmen in the First World War: The Official History of the Royal Canadian Air Force*, vol. 1 (Toronto: Toronto University Press, 1980), 76–82.
4. Ibid., 83.
5. Ibid., 89–91.
6. Roger G. Miller, "The Tail to Tooth Ratio: Royal Flying Corps and Air Service Co-operation in Maintenance Training during WW1," *Journal of the Royal Air Force Historical Society*, no. 32 (2004): 11.
7. Wise, *Canadian Airmen*, 94n.
8. Miller, "Tail to Tooth Ratio," 11.
9. Wise, *Canadian Airmen*, 91–97.
10. Ibid., 94.
11. Cameron, *Training to Fly*, 108–10.
12. H. A. Jones, *The War in the Air: Being the Story of the Part Played in the Great War by the Royal Air Force*, vol. 5 (Oxford: Clarendon Press, 1935), 466.
13. Wise, *Canadian Airmen*, 95.
14. Cameron, *Training to Fly*, 130.
15. Wise, *Canadian Airmen*, 93.
16. Miller, "Tail to Tooth Ratio," 17.
17. Cameron, *Training to Fly*, 158.
18. Miller, "Tail to Tooth Ratio," 18–20.
19. Ibid., 19.
20. Mitchell's papers are reproduced in Maurer Maurer, ed. and comp., *The U.S. Air Service in World War I*, vol. 2, *Early Concepts of Military Aviation* (Washington, DC:

Government Printing Office, 1978), 108–11, http://permanent.access.gpo.gov/airforcehistory/www.airforcehistory.hq.af.mil/Publications/fulltext/us_air_service_ww1-vol2.pdf. For a flavour of Trenchard's memorandum, see Andrew Boyle, *Trenchard* (London: Collins, 1962), 186–88.

21. Boyle, *Trenchard*, 300; and Jones, *War in the Air*, vol. 6, 148–49. The Independent Force was a force of British bomber squadrons established under separate command arrangements from the rest of the British air forces in France and intended to undertake independent strategic operations against Germany. Trenchard was placed in command of the force and reported back to the Air Ministry in London, rather than the British High Command in France. In fact Trenchard allocated far more of his effort to bombing French railways and German aerodromes than he did to attacking targets in Germany. For more on the Independent Force, see Biddle, *Rhetoric and Reality*, 40–48.

22. Jones, *War in the Air*, vol. 6, 149; and Maurer, vol. 3, *The Battle of St. Mihiel*, 57–59, http://permanent.access.gpo.gov/airforcehistory/www.airforcehistory.hq.af.mil/Publications/fulltext/us_air_service_ww1-vol3.pdf.

23. Maurer, vol. 2, *Early Concepts*, 141. The plan is reproduced in this volume on pages 141–57.

24. Biddle, *Rhetoric and Reality*, 54.

25. Ibid., 55.

26. Miller, "Tail to Tooth Ratio," 23.

27. Ibid., 20.

28. Ibid.; and I. B. Holley, *Ideas and Weapons: Exploitation of the Aerial Weapon by the United States during World War I* (New Haven, CT: Yale University Press, 1953), 144–45.

29. Miller, "Tail to Tooth Ratio," 21.

30. Holley, *Ideas and Weapons*, 145.

31. Miller, "Tail to Tooth Ratio," 21.



Air Lines

Anglo-American Tactical Air Operations in World War II

DR. THOMAS ALEXANDER HUGHES

Editorial Abstract: A look at tactical air operations in World War II illuminates important aspects of coalition warfare and the command and control of airpower. Dr. Hughes suggests how lessons learned in the past might help today's joint war fighters use airpower as a combat arm with distinct capabilities and perspectives.



IN THE ANGLO-AMERICAN tradition, aviation enthusiasts have championed airpower's inherent "flexibility and versatility" as one important advantage Airmen enjoy over their brethren on the ground and at sea.¹ Soldiers and sailors, the thinking goes, must face war's challenges bound by two-dimensional geometry and the slow algebra of surface movement. For them, demarcations like army-unit boundaries and naval vanguards not only rationalize the battlespace but also limit the elasticity of military options. To draw loosely from the great theorist Henri Jomini, to the man with a bayonet or the skipper on the foredeck, strategy is on a map. But flyers

fight wars free of such earthly limits. Liberated from the tyranny of terrain and unfettered by maritime matters, pilots retain a capacity to move quickly and freely, complicating the enemy's action and defeating his strategy.

Or so the thinking goes. Undoubtedly more flexible and probably more versatile than other combat arms, airpower is both informed and constrained by the same map that influences ground and sea operations—partly because air forces are often used in joint and combined contexts. Furthermore, Airmen themselves have been unwilling to free operations from the boundaries of battle that emerge from ground or sea perspectives. Airpower's



flexibility and versatility depend to some extent on a seamless battlespace, yet air leaders have often demonstrated an inclination to draw lines in the sky to codify the airspace, coordinate actions of different units, and manage coalition air operations. In other words, instead of implementing true integration that capitalizes on the wide-open sky, Airmen have often opted merely to deconflict one air operation from another—and in the process have fragmented their battlespace like their comrades in armies and navies have done.

Anglo-American tactical aviation in World War II serves as a case study in the tantalizing promise of integration and the eventual triumph of deconfliction to orchestrate airpower among services and between nations. Great Britain and the United States began their Allied effort in World War II with a strong common purpose and sufficiently similar views of aviation. In the laboratory of North Africa and Sicily, air leaders moved to amalgamate different air forces and to demarcate the sky along functional—not geographic or national—lines. Human, strategic, and political matters, however, made this objective too difficult. By the time of the invasion of Normandy, the Anglo-Americans had settled on strict air boundaries marked not only by national identity but also by army, corps, and division demarcations. This inclination to draw lines in the sky carried forward through the Cold War and beyond, suggesting that despite the rhetoric of airpower's flexibility and versatility, Airmen themselves sometimes adopt operational concepts that hinder the elasticity of military aviation.²

Tactical Aviation before World War II

The United States and Great Britain came to World War II with comparable if not uniform ideas about the proper development and application of airpower. Their respective aerial traditions from the Great War were operationally analogous, even if the British had more experience. In the war's last year, aviators from both countries participated in embryonic bombardment missions that fired the

imaginations of airpower enthusiasts and fueled debate about its future on both sides of the Atlantic. In broad terms, flyers advocated inventive, independent bombing missions for aviation while more conservative adherents in ground and sea uniforms envisioned a role for aviation in support of traditional forces. In the interwar period, these points of view became associated with strategic or tactical airpower, respectively. In Great Britain and the United States, notions of strategic aviation grabbed Airmen, despite differences in national circumstance and the organizational status of their respective air arms. Over time, airpower thought in England and America charted similar courses as pilots championed strategic aviation and situated tactical airpower in an important, though clearly subordinate, role.

A disposition toward strategic aviation led Airmen in both nations to similar assessments of military operations elsewhere. Royal Air Force (RAF) officers denounced the tactical character of air operations during the Spanish Civil War as “a prostitution of the Air Force” and warned that the conflict did not fit expected conventions of general European warfare.³ In America, Brig Gen Henry Arnold added that the fight had seen airpower used “promiscuously and indiscriminately to supplement artillery actions” instead of employing it behind enemy lines, “where it can exert power beyond the influence of your other arms, to influence the general action rather than the specific battle.”⁴ Pilots in America and Britain held steadfast to these beliefs, even after German blitzkrieg operations in Poland revealed tactical aviation’s potential prowess. Air Marshal Arthur Coningham, the great British practitioner of tactical operations, recalled how the RAF refused to imitate the Luftwaffe’s use of the Stuka, despite its status as “the pin up weapon of modern warfare. . . . Our Air Marshals were criticized at times but they knew the Stuka was a most inefficient aircraft of value only as a specialized weapon under selected conditions.”⁵

Anglo-American air arms did not entirely ignore aviation’s tactical functions. After England decided to raise an army capable of

campaigning on the Continent, officers there had to work out a system of air support. Pilots and soldiers agreed on air superiority as airpower's first priority before it turned to three other tasks: tactical reconnaissance, air transport, and air attack, including interdiction and close air support (CAS). But air and ground leaders floundered on arrangements for the command and control (C2) of air forces in a tactical role, in part because Airmen held little confidence in a soldier's ability to orchestrate airpower in modern war. In the end, before their baptism of fire in North Africa, the British could muster only an "awkward and complicated" arrangement whereby both an "air component" under the direct command of a soldier and an "air contingent" under the control of an Airman participated in the battle.⁶ Such fragmentation did not effectively leverage the flexibility of airpower, but at least the tactical use of aviation had attracted some attention in England before the war.

In America, where the air arm remained under Army control, tactical aviation remained a standard Air Corps function. Although many Airmen championed strategic concepts, ground officers who ran the Army insisted on a force structure and doctrine that enabled tactical airpower. The 3rd Attack Group became the world's first peacetime unit dedicated to CAS, and throughout the interwar period the Army Air Corps' makeup reflected a formal insistence on tactical aviation. In fact, during the two years before Pearl Harbor, heavy bombers constituted less than 2 percent of the Air Corps' aircraft purchases. As for doctrine, successive iterations of War Department Training Regulation (WDTR) 440-15, *Employment of the Air Forces of the Army*, generally identified aviation's primary mission, after air superiority, as destruction of "the most important enemy forces on the surface of the land or sea" (1923 version), and adhered to the age-old dictum that the "land campaign" was "the decisive factor in winning war" (1935 update).⁷

Even as both nations drew closer to tactical aviation with the approach of World War II, they left for the battlefield the difficult and delicate matter of command relationships

among ground and air leaders—in many ways the nub of tactical air operations. In Britain teasing out the nuance between "contingent" and "component" aviation fueled bickering among air and ground leaders until Prime Minister Winston Churchill proclaimed the situation "helpless." In the end, however, even his forceful persuasion could not broker a solution.⁸ In the United States, disputes over the C2 of air did not reach the White House, but prewar doctrine reflected nearly untenable compromise on the issue: WDTR 440-15 allowed for independent air operations when ground troops were not in close contact with the enemy but made no provision for the detachment of air units from ground control for such missions.⁹ Just how one might conduct independent operations within dependent command arrangements was a matter apparently left for soldiers and flyers to clear up during some future debut in war.

Up until they found themselves together in World War II, then, Britain and America had similar enough experiences and ideas about airpower to suggest a reasonable chance of integrating their air forces into one team for the fight. Certainly, variation existed, but both nations came to World War II with doctrinal and cultural expressions of airpower well recognized by the other. Once the war began, not even the Japanese attack on Pearl Harbor dissuaded the Allies from a common strategic cause to defeat Germany first. Side by side politically and strategically, akin in the beliefs and methods of war, and analogous in the orchestration and execution of military aviation, the Anglo-Americans entered the war with high expectations of building an integrated team, knowing only partially the great challenges that attended their journey.

Operations in North Africa and the Mediterranean

No prewar strategist in either Britain or America had thought of the Mediterranean Sea's south coast as a likely place for a clash, despite its awesome history as a battleground between civilizations. This lack of foresight

proved especially true of air officers busy developing the ideas and machinery of strategic airpower. The North African sand harbored no large enemy populations to bomb, no vital enemy infrastructure to destroy, and no important enemy capital to level. But the fact that armies in the Sahara Desert needed support placed enormous, unanticipated demands on tactical air operations in the war's early going. Each nation faced a steep learning curve for such tasks.

The English came first to the war and first to Africa, where they encountered Field Marshal Erwin Rommel's famed Afrika Corps. The Desert Fox, as the British called Rommel, schooled the English Army in modern mobile warfare, nearly pushing Commonwealth forces from the continent. In August 1942, Lt Gen Bernard Montgomery inherited command of the dispirited, defeated British Eighth Army and in October brilliantly evened the battle ledger with the Germans at the Second Battle of El Alamein. There ensued a series of see-saw battles as the British marched from Egypt to Tunisia. Haltingly at first, the drive gained momentum with each passing week until Axis forces occupied a shrinking piece of African real estate by January 1943. This turn of fortune had many fathers, including a refusal in Berlin to reinforce German troops on the continent. But growing British competence in tactical air operations played a part. One man's contributions in that regard stand to this day as a signal achievement of the war in the west.

Raised in New Zealand on the edge of the empire, Arthur Coningham had in some ways operated on the periphery of the RAF during his prewar career. While students attending courses at RAF Staff College in Andover devised—and officers in the Air Ministry championed—strategic bombing theory, Coningham was busy in the field. “Of all the RAF’s senior commanders in the Second World War,” wrote Coningham’s biographer, “he was unique in that he received no formal, theoretical service education. By the end of the war, he was inordinately proud of the fact that he had neither served in the Air Ministry nor

studied at Andover. His entire career was practical.”¹⁰ Unencumbered by prewar notions, Air Vice-Marshal Coningham came to North Africa in the summer of 1941 with a relatively open mind, able to counter the challenges of the desert with creative innovation.

The problems were legion, many of them stemming from materiel shortages or the lack of battle experience—conditions that would right themselves with the passage of time. Others were squarely the product of interservice cooperation and doctrinal ambiguity. Keenly aware of the tensions in England that had attended efforts to develop tactical aviation, Coningham nevertheless believed that these labors had suffered from peacetime malaise and “could only be done on an academic basis” until war came.¹¹ Now, in the thick of the fight, he used the desert tableau as an anvil on which he shaped the machinery of CAS.

Heeding the advice of Air Marshal Arthur Tedder, his immediate superior in the air war, to “get together” with the Army, Coningham swiftly established a joint headquarters with ground commanders in the Western Desert. Looking back after the war, Coningham believed that collocating headquarters “was of fundamental importance and had a direct bearing on the combined fighting of the two Services until the end of the War.”¹² From there he fleshed out the mechanisms of tactical airpower. Deficiencies existed in the tactics for air support, techniques in the placement of bomb lines, and procedures in the allocation of targets. As always, the C2 of aircraft underlay all other matters because soldiers wanted to divvy up air units to ground commanders, and pilots insisted on a more unified approach to the conduct of the air war.

With success at El Alamein came recognition for Coningham’s ideas, which included a trinity of exhortations to guide air operations: “The strength of air power lies in its flexibility and capacity for rapid concentration; it follows that control must be centralized in an Air Commander and command exercised through Air Force channels; [and] Air forces must be concentrated in use and not dispersed in penny packets”—the British expression for sol-



diers' preference to assign specific air units to specific ground commands.¹³ In time, prominent generals such as Montgomery came to parrot Coningham's ideas, and the notions found expression in the widely circulated Air Ministry pamphlet *Air Power in the Land Battle*.¹⁴

British prestige and Coningham's ideas rode high as the Americans experienced their battle debut in Africa. Operation Torch brought US and British forces under the command of Gen Dwight Eisenhower to the continent in November 1942. Like the previous efforts of the British, early operations produced despair and defeat: the Americans' failure to reach Tunisia before the winter rains and a debacle in air-ground operations at the Battle of Kasserine Pass ensured a long, hard campaign in the spring of 1943. Fortunately, by then Montgomery and Coningham had completed their march from Egypt and were south of Tunis, ready to join hands with Eisenhower in an Anglo-American vise to squeeze the last Axis troops from Africa.

This linking required a combined command, to be led by Eisenhower, whom Pres. Franklin Roosevelt and Churchill had agreed upon. As supreme commander, Eisenhower tended to view unity of command from a theater point of view, a position that dovetailed with Coningham's notions of a single Airman leading all air operations within a given theater.¹⁵ A consensus builder by inclination and willing, at first, to look to the more experienced British, Eisenhower also accepted the English concept of dividing air-mission responsibilities by function rather than nationality. Hence, when he created the Mediterranean Air Command and named Tedder its leader, Eisenhower worked to ensure truly combined air organizations. Below Tedder's command sat the Northwest African Air Forces, commanded by the American general Carl Spaatz, who in turn split his force into five subordinate commands: Strategic Air Force, led by the American general James Doolittle; Tactical Air Force, led by Coningham; Coastal Air Force, led by the English air vice-marshall Hugh Lloyd; Training Command, led by the American general Joe Cannon; and a reconnaissance wing, com-

manded by President Roosevelt's son Elliot. Each of these forces, in turn, consisted of units from both nations. By mixing US and British forces up and down the chain of command, the Northwest African Air Forces set a radical precedent in Allied cooperation—one not mirrored in either the ground or naval commands. It was a bold move but one that, in theory anyway, best leveraged the flexibility of airpower. Time alone would tell how well the arrangement worked.

Initial air operations went well. Enough doctrinal similarity existed between US Army Field Manual (FM) 31-35, *Air Ground Operations*, and British Army Training Instruction Number 6 regarding air-support control centers and liaison parties to ensure smooth procedural operations within and among lower-echelon units.¹⁶ Although some national cleavage developed in Doolittle's Strategic Air Force, integrated air operations existed in both Coningham's Tactical Air Force and in Lloyd's Coastal Air Force. In those units, air assets often took on tasks regardless of nationality and always in close coordination; Coastal Air Force, for example, did not always delineate nationality on its daily operations orders.¹⁷ Late in the campaign, in April and May 1943, the US Twelfth Air Force began to concentrate on support to American troops, but this was an ad hoc exception to the emerging, if still newborn, pattern of amalgamated air operations. By early May, Allied troops had cornered the last of the enemy soldiers in the port of Tunis, and on 10 May the remaining Germans surrendered. Air-support operations, especially interdiction missions, played a part in the triumph. In the end, Axis shortages of materiel were so acute that some high-ranking Wehrmacht officers could make their escape only after finding a lone barrel of aviation fuel that had washed in from the sea.¹⁸

Continuing to follow British footsteps, the Americans refined US aviation doctrine, encouraged by their success in the desert. Based in part on British practices, the new doctrine—FM 100-20, *Command and Employment of Air Power*—“acknowledged Coningham's emphasis on the flexibility of air power and the need

for centralized control under a knowledgeable air force commander.”¹⁹ It embodied many lessons of desert warfare, especially the importance of joint planning, liaison officers, and adequate communications. Although much of the document’s innards reiterated earlier doctrine, FM 100-20 included a novel clarion call for airpower equality in joint warfare: “LAND POWER AND AIR POWER ARE COEQUAL AND INTERDEPENDENT FORCES; NEITHER IS AN AUXILIARY OF THE OTHER” (capitalization in original).²⁰ American pilots, conditioned by the struggle for air autonomy in the interwar years, saw in the document independence for the air force, with one future four-star general calling it the “emancipation proclamation of air power.”²¹ Viewed in the context of its birth, however, the new doctrine was not a scheme to widen the gulf between pilots and soldiers but a move toward better and greater air-ground cooperation, based in part on experiences gained in North Africa.

In the summer of 1943, the Anglo-Americans hastened to chase the Axis powers across the Mediterranean, invading Sicily in July and Italy proper in September. Spaatz’s combined Northwest African Air Forces bore the brunt of air responsibility for these assaults, and air tasks fell into an increasingly familiar categorization for tactical aviation in support of amphibious operations: neutralize the enemy air force, destroy enemy communications, isolate the battlefield, and provide close support to invading ground troops. Consistent with views of airpower’s flexibility, plans for the Sicilian invasion called for aviation integration and a “high degree of coordination” among Spaatz’s air forces. This was especially true for Coningham’s tactical and Doolittle’s strategic air commands, since “depending on the situation, either force might come under control of the other.”²² This daring design required the respective commanders to work effectively without regard to national insignia on shoulder boards or national boundaries on battlefields. More than anything, the success of combined commands in North Africa fostered beliefs that such a fluid arrangement maximized air-

power’s versatility and optimism that it could work elsewhere.

But success does not always translate from one circumstance to another. By the summer of 1943, the Americans constituted an increasing share of the Allied force structure. Moreover, having acquired combat experience of their own, they were less likely to accept a role subordinate to that of the British in the wartime partnership. This shift influenced relationships and affected decisions at every level of war, including the matter of air organization in the Mediterranean. Lt Gen George Patton, the senior American field soldier for the Sicilian invasion, believed that British air leadership was now disproportionate to their rank-and-file strength, starting with Spaatz’s English superiors in the Mediterranean Air Command: “Tedder controls the air with Spaatz, a straw man, under him,” Patton complained to Eisenhower. “Conyngham [*sic*] commands the tactical air force [while] . . . our close support force is commanded by a colonel.” Although Patton was wrong about a colonel controlling American CAS, he forcefully pressed his point home, concluding that “the U.S. is getting gypped.”²³

Patton was not alone. Other Americans increasingly believed that the British pushed for integrated air commands in order to retain positions of leadership that their force structure alone could no longer support. This view was at once cynical and somewhat true, challenging even Eisenhower’s consistent inclination to find harmony among his subordinates: “The American Air Force and principal commanders,” he reported in July, “do not have that prestige that should be theirs” in the current command setup.²⁴

More than prestige was at stake. The international flavor of air commands in North Africa may have heightened airpower’s operational elasticity, but it complicated the administrative lines of control that must necessarily pass through national channels. This problem became especially apparent in the Coastal Air Force, where disciplinary action within an assigned American fighter group became entangled in RAF legalities.²⁵ To remedy this defi-

ciency and appease bruised egos, Eisenhower formulated plans to make Spaatz the commanding general of all US Army Air Forces (AAF) units in the Mediterranean and give him responsibility for the administrative oversight of US flyers. Eisenhower felt that doing so gave Spaatz the "strength, prestige, and influence" he deserved and provided for the "absolute continuity of American command of all American units from top to bottom."²⁶

As long as the new arrangement was limited to administrative command prerogatives, it did not violate the animating spirit of the Allied admixture of forces in the operational and tactical conduct of the war. But Spaatz soon set his sights on wider authority. In the middle of July 1943, he moved to ensure his influence over US sorties via a separate, secret communications net known as Redline, telling his principal subordinate US commanders "to have officers in training so that you will have them ready to take over . . . [when] the Americans are in complete control."²⁷ A close examination of Redline suggests it "grew into a swift and effective all-American communications system" used to circumvent Coningham's control of US units in the Tactical Air Force.²⁸ If Redline did not quite constitute a wholesale repudiation of combined air commands, it was at least a rascal's way of undercutting their effectiveness.

National and personal pride motivated Spaatz, but he also acted out of sincere concern for the effective running of the air campaign. He established Redline only after a British practice of bypassing *him* became clear, especially in messages between Tedder and Coningham. Moreover, Spaatz hoped that Redline would not so much usurp Coningham as encourage him to act more decisively in the employment of his command and in his coordination with Doolittle's Strategic Air Force. Operational effectiveness had become a real issue late in the Sicilian campaign, when German troops retreated en masse across the Strait of Messina to Italy. Instead of implementing aggressive action to interdict a fleeing enemy, Coningham moved cautiously and with great reluctance to synchronize his fighter

planes with Doolittle's bombers. In a curious rejection of his own ideas of airpower's adaptability, Coningham never thought much of interchanging fighters and bombers when circumstance demanded, and even his sympathetic biographer refused to muster much of a defense for Coningham's failures late in the Sicilian campaign.²⁹

British commanders had always believed that the fusing of the RAF and the AAF had "been a very tricky job" requiring delicate hands and deft politics. Now, in the late summer of 1943, they felt that "nationalism has reared its ugly head."³⁰ Under such conditions, they foresaw a time when national identity trumped function in the organization and employment of airpower. No doubt, Americans would have agreed. That summer represented a signal moment in the history of combined air operations. For a brief time above the North African sand, the promise of integrated coalition air operations lived in an embryonic stage. But it was stillborn over Sicily's rugged terrain, unable to overcome powerful personal and national forces. After the war, Coningham tried to put a happy face on this death, telling audiences that Mediterranean operations had bequeathed to the Anglo-Americans "processes of Allied Command, staff structure, [and a] dove-tailing of the three services of each nation into a team."³¹ In further retrospect, members of the Western Alliance undoubtedly grew in strength and prowess in the years before the invasion of Normandy, but their combined efforts also testified to Winston Churchill's belief that fighting without allies was the only thing worse than fighting with them.

D-Day and Operation Overlord

There was a slight pretense of integrated air operations by the time the Anglo-Americans began planning in earnest for the liberation of France. Many principal commanders from the south, including Eisenhower, Tedder, Spaatz, and Coningham, came to England in the winter before D-day to participate in Operation Overlord. They brought from the Mediterranean their collective competence

and great experience. Each amphibious landing in Europe occupied a distinct point on a learning curve for the Anglo-Americans, and Normandy represented the pinnacle of commander expertise. Despite their success, however, these leaders also brought heavy baggage with them to England. In Overlord's planning and execution, they failed to shake emergent patterns of organizational and operational conflict in the conduct of air war. Moreover, their scheme of air support for the invasion actually compounded difficulties in the integration of air operations and accented differences among men and nations.

A thin facade of Allied integration shrouded the air setup for Overlord. Reprising his role as supreme commander, Eisenhower again tapped Tedder as his deputy. In the normal fashion, Eisenhower's command had major land, sea, and air components. The English air chief marshal Trafford Leigh-Mallory, one of the few senior leaders in Overlord who had not seen experience in the Mediterranean, commanded the Allied Expeditionary Air Force (AEAF). As had been the practice in the south, his deputy was an American, Maj Gen Hoyt Vandenberg, who had only very limited experience in North Africa. Leigh-Mallory's force consisted of units from both nations organized into two air forces: the US Ninth Air Force and the British Second Tactical Air Force, commanded by Lt Gen Lewis Brereton and Coningham, respectively. In the weeks before and after D-day, Coningham, working directly for Leigh-Mallory, exercised supernumerary authority over both tactical air forces in an effort to maximize coordination across national boundaries.³² In appearance, all this looked like the beginnings of a renewed effort to integrate air operations.

It was not. The Leigh-Mallory/Vandenberg pairing was designed to further delineate operations rather than conjoin national forces. Spaatz—who now led American strategic air forces in the bombing of Germany and who remained the senior administrative air commander throughout Europe—had lobbied for Vandenberg's appointment because Vandenberg could be trusted to safeguard “the inter-

ests of the American component” and protect “the operational use” of US planes. In Spaatz's scheme, Vandenberg would also become the conduit through which Spaatz might exercise de facto control over Brereton's Ninth Air Force, rendering Leigh-Mallory a nominal commander of American forces.³³ Eisenhower's tacit agreement to this bit of skulduggery eliminated any chance that the AEAF could integrate air operations across national lines. After that, air integration became only a red herring, obscuring more realistic hopes of deconflicting air operations, which became the true purpose of Leigh-Mallory's command. This objective was manifest in his command's internal structure: the US Ninth Air Force would provide support to the Americans landing in France; the British Second Tactical Air Force would concentrate on Commonwealth troops wading ashore; and the two would meet only in extraordinary circumstances. Down the chain of command, air operations were delineated further by linking specific air units to specific ground commands, a procedure that basically repudiated Coningham's ideas and the notions enshrined in FM 100-20.

The role of strategic air forces in support of Overlord complicated the whole matter of air synchronization for the Normandy campaign. Although Spaatz and Air Chief Marshal Arthur Harris, commander of British Bomber Command, recognized obligations to assist in the invasion, they were deeply committed to strategic bombing and refused to cede command prerogatives to Leigh-Mallory, whom they did not trust to direct bomber forces. Since the bomber forces were attached and not assigned to Eisenhower's command, the supreme commander had to step lightly in efforts to coordinate the various air organizations. Weeks of intense negotiations and a threat to resign bought for Eisenhower an informal scheme of control centered on his deputy. “I will exert direct *supervision* of all air forces—through you,” he explained to Tedder, “authorizing you to use headquarters facilities now existing to make your control effective. L. M.'s [Leigh-Mallory's] position would not be changed so far as *assigned forces* are con-

cerned but those *attached* for definite periods or definite jobs would not come under his *command*" (emphasis in original).³⁴

Eisenhower had managed to place the strategic air forces within his orbit yet beyond the reach of Leigh-Mallory—but at a high price since this scheme left Eisenhower without a single air commander. Henceforth, the supreme commander coordinated his air operations through three clearly independent air organizations: US Strategic Air Forces in Europe, British Bomber Command, and the AEAFC. The absence of a single air commander resulted in an air plan that integrated various invasion tasks in an uncertain and tentative manner. A mere week before the invasion, Leigh-Mallory felt obliged to remind Spaatz of the D-day targets "which it is desired you attack," recalling that "you or one of your representatives have agreed" to supply convoy cover and armed reconnaissance for the land forces. Furthermore, Leigh-Mallory understood that Spaatz had "agreed" to participate in deception operations and, "weather permitting," had acquiesced to striking railroad centers in the three days prior to D-day.³⁵ Such language resembled treaty negotiations among sovereign entities—not military commands under unified direction.

This command setup sometimes led to ineffective performance. On D-day, 1,200 Eighth Air Force bombers blasted Omaha Beach with a faulty plan: the planes dropped undersized bombs, and most bombardiers delayed their bomb drops over the coast anywhere from five to 30 seconds, ensuring that most ordnance fell far inland of aiming points. Although many people understood that such a plan would render the bombing impotent, Overlord had no Airman who could leverage command authority to change it or cancel the bombers' participation. As a result, "the immediate beach areas showed only limited evidence of bombing damage," and the strike failed to impair seriously the first line of German defenders—its professed objective.³⁶

After Allied forces reached the far shore, each nation's tactical air operations worked well as long as sorties conformed to national

boundaries. In the weeks after D-day, Coningham used his supernumerary authority over the tactical forces to deconflict missions, and both tactical air forces developed an awesome capacity to assist ground troops. Free from issues of national pride and prejudice, each air force concentrated on increasingly successful battlefield interdiction and CAS operations. By late June, Allied fighter-bomber effectiveness had led to a rare confluence of views at all levels of the German field command: the senior German commander in France, Field Marshal Gerd von Rundstedt, described his rear areas as a "traffic desert"; Rommel, his immediate subordinate, told Berlin "there was simply no answer" to Allied airpower in Normandy; and rank-and-file Wehrmacht soldiers took to calling Allied fighter-bombers the "most terrible weapon."³⁷ To anyone who cared to look, tactical air operations in Normandy gave the lie to the idea that only heavy bombers could exert a strategic influence on the course of the war.

Two young flag officers working along the seams between operational and tactical command made much of this possible. In the British zone, Air Vice-Marshal Harry Broadhurst, who commanded the 83rd Group within Coningham's air force, was instrumental in smoothing air-ground relationships that had soured among Commonwealth commanders. Leigh-Mallory, who never gained the confidence of fellow air leaders, felt that Tedder and Coningham often bypassed him in a conspiracy to deny the British Army the air support it deserved. That perception was a stretch, but Overlord's convoluted air setup made it difficult to keep strict faith with the chain of command, even within a national sector. For his part, Montgomery, who now commanded the 21st Army Group, sometimes blamed poor air support for his troops' sluggish pace of advance, eventually concluding that Coningham was "a bad man [and] not genuine and terribly jealous." In Montgomery's view, all this bickering usually came to naught, but not before "several hours a day are wasted in argument with the opposing camps, and in ensuring that the air jealousies do not lose us the battle."³⁸



More often than not, it fell to Broadhurst to smooth over these quarrels. A fighter pilot of great experience, Broadhurst “earned the affection and respect of all” with whom he worked. He was as responsible as anyone for the effective marrying of air and ground operations in the British sector.³⁹

Maj Gen Elwood R. “Pete” Quesada was Broadhurst’s analog along the American front. Like Coningham, he had come to the European fighting with an open mind about air-power’s place in war. Once there, he fostered myriad innovations in tactical aviation, including the development of armored-column cover that aided Patton’s breathtaking pursuit of retreating Germans in August. Like Broadhurst, Quesada nurtured good relations with ground commanders. Lt Gen Omar Bradley, the senior American ground soldier in Normandy, believed that Quesada was a “jewel,” and others agreed: “Nothing conventional about Quesada,” remembered one soldier. “When he talks power, he means everything but the kitchen sink.” Three weeks into the Normandy fighting, the consensus within the American Army in Normandy was that “Quesada was a fine unpretentious field soldier who has done more than anyone else to bring air and ground closer together in this operation.”⁴⁰

Broadhurst and Quesada were responsible for one of the very few instances of effective air integration in Normandy. In early August 1944, as Patton raced into Brittany, the Germans nearly cut his supply lines at Arromanches. Reacting to the emergency, Broadhurst and Quesada devised a plan whereby British Typhoons interdicted German armored columns and American P-47s provided close support to US troops suddenly surrounded near the small town of Mortain. Together with dogged determination from the soldiers, Allied fighter-bombers succeeded in safeguarding Patton’s communications. Looking back, Coningham believed that the battle constituted one of the war’s best examples of tactical aviation: “It proved that a Tactical Air Force may be a decisive battle-winning factor, and it showed the smooth coordination of air effort which could be achieved at short notice

by the teamwork which had been perfected between the 9th Air Force and the 2nd [Tactical Air Force].”⁴¹

Yet the battle at Mortain represented an emergency demanding an Allied reaction; in battles of their own choosing, the Anglo-Americans rarely integrated their tactical air forces in Western Europe. This neglect sometimes had disastrous consequences. In the middle of August, the Allies tried to bag a large salient of German forces near Falaise. Tightening the noose around the Germans required Patton’s force to swing around and come up against Montgomery’s Commonwealth troops, a delicate move that flirted with fratricide on a large scale. Because Anglo-American pilots had worked *side by side* rather than *together*, the British and American CAS schemes were different enough to court tragedy as the Allies closed on each other. On 16 August, Canadian troops who had marked their positions with red smoke were bombed by American aircraft because in the US scheme, such a signal denoted enemy targets. Two days later, a British unit reported 40 instances of accidental attacks by American flyers. With no effective integration of air forces, the Allies proved incapable of pressing the air battle into the salient. Partly for this reason, Allied leaders called off attempts to cut retreat routes and capture the Germans. As a result, nearly 100,000 enemy soldiers escaped to fight another day.

Integrated aviation could have mitigated this debacle by blurring the seam between national boundaries. Instead, air operations based on deconfliction made airpower as sensitive to army boundaries as ground combat, and the potential for mistaken killing in the air became as great as that from friendly fire across infantry units—in this case, more real. After the war, Coningham deemed it “unfortunate that a national Army Group boundary coincided with the pocket.”⁴² But failure at Falaise was not so much a matter of fortune as design. Air leaders codified their operations along national lines, just as the soldiers had done, in a misguided attempt to provide effective close support. In the process, pilots



made airpower more—not less—like ground power, robbing the joint and combined campaign of the synergy that overlapping instruments of war can bring to the battlefield.

The Allies never did fix this problem in World War II. Instances of close cooperation occurred, as during missions supporting Operation Market Garden or during the Battle of the Bulge, when Montgomery took command of an entire American army and its supporting air forces. But these were either failures or emergencies—sometimes both. As a matter of method and design, the Anglo-Americans hewed to the belief that separating tactical air forces along national lines best leveraged airpower. Throughout the war, the Allies never had a mechanism by which the broad and varied activity of an air campaign was centrally conceived, planned, executed, and assessed. The RAF's official historian believed that the air setup in place demonstrated “the weakness of the committee technique.”⁴³ According to official American chroniclers, the system worked “not so much because of its structure as because of the good sense and proper spirit of top British and American commanders.”⁴⁴

Conclusion

This view is overly sympathetic. Certainly, tactical aviation was important to Allied success in World War II—it is hard to imagine victory without it. Still, air operations in support of ground forces could have been better, especially when circumstances required operating across national boundaries. Perhaps this amounts to quibbling with success, but nations with traditions of military victory must nitpick if they hope to learn from the past.

Unfortunately, in the case of tactical air operations, neither country did so in the years following World War II. The emergent Cold War put a premium on strategic airpower and consigned practitioners of tactical aviation to backwater commands. In Britain the Air Min-

istry made Coningham head of Training Command, a move that many commentators found curious. Opined the *London News Chronicle*, “One of the greatest air generals Britain has produced is being relegated to a comparatively minor command and will not have a voice on the Air Council”—the RAF’s policy body.⁴⁵ In the United States, Pete Quesada held a succession of gratuitous, dead-end jobs after a brief stint leading Tactical Air Command. He finally resigned his commission in frustration after the newly independent Air Force assigned him the suicidal task of folding the Air National Guard and Air Reserves into one organization.

Throughout much of the Cold War, the air forces in Britain and America hewed fast to the idea of deconfliction in air operations. For the United States, this inclination extended to joint as well as combined operations. In Korea and Vietnam, the Air Force, Navy, and Marine Corps divvied airspace among them in a manner that denied airpower’s flexibility. More recently, technology promises both to enable and deny integrated operations: the digital battlespace potentially makes air operations more malleable by making airspace more seamless, but the technological divide between prospective coalition partners fosters an enduring practice of nation-specific air tasking orders in the manner of World War II’s Redline.

Today, it is commonplace to proclaim airpower’s inherent adaptability in war, and flexibility and versatility are ubiquitous in descriptions of airpower. But the history of tactical air operations in World War II suggests that this elasticity is not intrinsic to airpower—even as it is undeniably one of aviation’s great capacities. Flexibility and versatility do not reside naturally or inherently in air operations. They must be nurtured within sound C2 arrangements, appropriate organizational forms, relevant concepts of operations, and suitable applications of technology. Airpower has great adaptive facility, but it is not innately adaptive. That connection must be made purposefully. □

Notes

1. Both US Air Force and British Royal Air Force doctrine use these terms. In the American view, flexibility and versatility are fundamental "tenets of airpower"; for the English, they are "enduring factors" of military aviation. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, 17 November 2003, iii; and AP3000, *British Air Power Doctrine*, 3rd ed., 1999, 1.2.3–1.2.4.
2. Generally, in this article tactical aviation refers to air operations in support of ground forces, a definition common in the 1930s and 1940s. Specifically, the article concerns itself with close air support and interdiction missions—less so with airborne, troop-transport, air-supply, and reconnaissance operations.
3. John Kennedy, *The Business of War: The War Narrative of Major-General Sir John Kennedy*, ed. Bernard Fergusson (London: Hutchinson, 1957), 107; and memorandum for record, 21 November 1939, Air 35/214, Public Record Office, Kew, England (hereafter PRO).
4. Arnold cited in Lee Kennett, "Developments to 1939," in *Case Studies in the Development of Close Air Support*, ed. Benjamin Franklin Cooling (Washington, DC: Office of Air Force History, 1990), 48. The US Army Air Corps also largely ignored the US Marine Corps' rich and varied experience with air support in Nicaragua during the interwar period.
5. Arthur Coningham, "The Development of Tactical Air Forces," *Royal United Services Institute for Defence Studies (RUSI) Journal* 91 (1946): 212.
6. Will Jacobs, "Air Support for the British Army, 1939–1943," *Military Affairs*, December 1982, 174.
7. Both versions of WDTR 440-15 cited in Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, vol. 1, 1907–1960 (Maxwell AFB, AL: Air University Press, 1989), 41, 77. Similarly, the last peacetime version of Field Manual (FM) 1-5, *Employment of Aviation of the Army*, 15 April 1940, stressed operations designed to "defeat important elements of the enemy armed forces" (quoted in Col Phillip S. Meilinger, USAF, retired, *Airpower: Myths and Facts* [Maxwell AFB, AL: Air University Press, 2003], 19). For a close explication of prewar US Army doctrine relating to aerial operations, see Daniel R. Mortensen, *A Pattern for Joint Operations: World War II Close Air Support, North Africa* (Washington, DC: Office of Air Force History and US Army Center of Military History, 1987).
8. Churchill cited in Will Jacobs, "Air Support for the British Army, 1939–1943," *Military Affairs*, December 1982, 179.
9. Mortensen, *Pattern for Joint Operations*, 7, 20.
10. Vincent Orange, *Coningham: A Biography of Air Marshal Sir Arthur Coningham* (Washington, DC: Center for Air Force History, 1992), 34.
11. Coningham, "Development of Tactical Air Forces," 213.
12. Ibid.
13. Ibid., 215.
14. Orange, *Coningham*, 134.
15. Mortensen, *Pattern for Joint Operations*, 63.
16. Ibid., 50.
17. "Notes on Africa," photo album, box 1722, Hugh Lloyd Papers, RAF Museum, Hendon, England.
18. Thomas Alexander Hughes, *Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II* (New York: Free Press, 1995), 94.
19. Mortensen, *Pattern for Joint Operations*, 78.
20. FM 100-20, *Command and Employment of Air Power*, 21 July 1943, 3.
21. William Momyer, *Air Power in Three Wars* (Washington, DC: Department of the Air Force, 1978), 10.
22. Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 2, *Europe: Torch to Point-blank, August 1942 to December 1943* (1949; new imprint, Washington, DC: Office of Air Force History, 1983), 444.
23. Martin Blumenson, *The Patton Papers*, vol. 2 (Boston: Houghton Mifflin, 1972–1974), 254.
24. Alfred D. Chandler Jr. et al., eds., *The Papers of Dwight David Eisenhower*, vol. 2, *Eisenhower to Marshall, July 18, 1943* (Baltimore: Johns Hopkins University Press, 1970), 1263–64.
25. "Notes on Africa." See also Hughes, *Over Lord*, 87–94; and "Minutes of the Air Officer Commanding, Northwest African Coastal Air Force," n.d., Air 24/1239, PRO.
26. Chandler et al., eds., *Papers of Dwight David Eisenhower*, vol. 2, *Eisenhower to Marshall*, 1263–64.
27. Spaatz cited in Richard G. Davis, *Carl A. Spaatz and the Air War in Europe* (Washington, DC: Smithsonian Institution Press, 1992), 248.
28. Ibid.
29. Orange, *Coningham*, 166–68.
30. Ibid., 165.
31. Coningham, "Development of Tactical Air Forces," 216.
32. Orange, *Coningham*, 187.
33. Davis, *Carl A. Spaatz*, 355.
34. Alfred D. Chandler Jr. et al., eds., *Papers of Dwight David Eisenhower*, vol. 3, *Eisenhower to Tedder, 29 February 1944* (Baltimore: Johns Hopkins University Press, 1970), 1755–56.
35. Leigh-Mallory to Spaatz, letter, 1 June 1944, US Air Force Historical Research Agency, Maxwell AFB, AL (hereafter AFHRA), 521.451, June 1944.
36. After-Action Report, "Eighth Air Force: Tactical Operations in Support of Allied Landings in Normandy, 2 June–17 June 1944," 9, AFHRA, 521.451, June 1944. This and the preceding three paragraphs are drawn largely from Dr. Thomas Alexander Hughes, "Normandy: A Modern Air Campaign?" *Air and Space Power Journal* 17, no. 4 (Winter 2003): 16–29.
37. Rundstedt cited in POW Interviews, "Rundstedt," 20 May 1945, Sheffield Edwards Papers, US Army Military History Institute, Carlisle Barracks, PA; others cited in Hughes, *Over Lord*, 151.
38. Montgomery cited in Nigel Hamilton, *Master of the Battlefield: Monty's War Years, 1942–1944* (New York: McGraw-Hill, 1983), 692–93.
39. Max Hastings, *Overlord: D-Day and the Battle for Normandy, 1944* (New York: Simon and Schuster, 1984), 271.
40. All cited in Hughes, *Over Lord*, 157.
41. Coningham cited in Orange, *Coningham*, 208.
42. Coningham, "Development of Tactical Air Forces," 216.
43. Hilary St. George Saunders, *The Royal Air Force, 1939–1945*, vol. 3, *The Fight Is Won* (London: Her Majesty's Stationery Office, 1954), 82.
44. Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 3, *Europe: Argument to V-E Day, January 1944 to May 1945* (1951; new imprint, Washington, DC: Office of Air Force History, 1983), 83.
45. *London News Chronicle*, 31 July 1945, cited in Orange, *Coningham*, 240.



PIREP

Editor's Note: PIREP is aviation shorthand for pilot report. It's a means for one pilot to pass on current, potentially useful information to other pilots. In the same fashion, we intend to use this department to let readers know about air and space power items of interest.

The British American Forces Dining Club

COL LARRY G. CARTER, USAF, RETIRED*

In war it is not always possible to have everything go exactly as one likes. In working with Allies it sometimes happens that they develop opinions of their own.

—Sir Winston Churchill
The Hinge of Fate

SITTING IN THE reviewing stands that overlook the main parade yard inside the ancient walls of the Tower of London, HRH Prince Philip, Duke of Edinburgh, leaned over and explained the maneuvers of a British military marching band to Brig Gen Kurt B. Anderson.¹ Commander of the United States Air Force's 48th Fighter Wing, based at Royal Air Force (RAF) Lakenheath, General Anderson was the senior American officer in attendance that day. Prince Philip's act underscored the very special relationship between the United States and Britain—the product of a long history between the two countries, conscious decisions, and much nurturing. That day the Duke of Edinburgh, the queen's consort, hosted one of those nurturing institutions—a meeting of the British American Forces Dining Club (BAFDC).

The club began on 1 March 1943, during the dark days of World War II, under the patronage of Gen Dwight D. Eisenhower and William Richard Morris, first Viscount

Nuffield—an English philanthropist and automobile manufacturer who produced aircraft during the war. General Eisenhower, who had replaced Adm Harold Stark as overall com-



The BAFDC crest, designed by the College of Heralds (the British heraldic authority—also known as the College of Arms), features the American eagle and British lion.

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mander of US forces in the European theater in June 1942, assumed responsibility for the daytime US strategic bombing campaign against Germany just as it began. In close co-operation with the British staff, he also directed initial planning for the land invasion of occupied Western Europe.²

Hailing from “two countries divided by a common language,”³ officers of the combined staff who planned Operation Overlord found that their different cultures, experiences, and military traditions adversely affected their knowledge of each other’s staffing processes and procedures, thus straining relationships and creating distrust. Seeking to reverse those misgivings and this growing animosity, in the latter part of 1942 several senior British and American officers—some of whom became original members of the BAFDC—had drinks together, and “after about the fourth round they began to feel much more sympathetic to each other’s point of view—and regular dinners were suggested.”⁴

At the time of that first BAFDC dinner in 1943, General Eisenhower and his staff were in Algiers; his combined forces found themselves at an operational turning point in North Africa; and planning proceeded apace for follow-on operations in Sicily and Italy. In November 1942, the Allies had executed Operation Torch, the invasion of North Africa, with Eisenhower as the combined-forces commander. Until the Casablanca conference in January 1943, the general had remained commander of all US forces in Europe and in that capacity continued to encourage activities to help build trust and confidence in the combined forces. At that conference, Gen George C. Marshall, US Army chief of staff, announced the establishment of a separate European theater of operations in the United Kingdom led by Gen Frank Andrews, who attended the first BAFDC dinner as commander of US forces in Europe.⁵ (Marshall’s directive ran contrary to the positions of Eisenhower and American generals Henry H. Arnold and Carl A. Spaatz, who saw the bombing efforts of Eighth Air Force in England and the operations of US



Courtesy of the National Archives

Prime Minister Churchill and General Eisenhower

forces in North Africa as part of one theater that should remain under a single command.)

Viscount Nuffield was the guest of honor at that initial BAFDC dinner attended by 12 senior British and American officers, including UK representatives Adm Sir Dudley Pound, Field Marshal Sir Alan Francis Brooke, and Air Chief Marshal Sir Charles “Peter” Portal, as well as Admiral Stark and General Andrews of the United States. The senior British naval officer, Sir Dudley Pound had served as Admiral of the Fleet and First Sea Lord since 1939 and would continue to do so until his death in October 1943. Field Marshal Brooke, chief of the Imperial General Staff (the head of the British Army), was the foremost military advisor to Prime Minister Winston Churchill. Dominating British military leadership by virtue of his intellect and personality, he reportedly was the only senior British officer able to challenge Churchill’s sometimes volatile and impetuous military judgments.⁶ The leaders of the Casablanca conference had selected Air Chief Marshal Portal, the senior British Airman, to coordinate the Combined Bomber Offensive against Germany. A strong supporter of daylight precision bombing, he had helped American Airmen convince a skeptical Prime Minister Churchill of its value. Winning Churchill’s confidence and establishing friendships with senior Allied leaders allowed Air Chief Marshal Portal to



contribute significantly to the war effort. He became Marshal of the RAF in January 1944.

Admiral Stark had served as the eighth chief of naval operations prior to assuming command of US forces in the European theater in April 1942. Replaced by General Eisenhower in June of that year, he became commander of US naval forces in Europe, directing the Navy's buildup and participation in the Normandy invasion. Talented diplomatically, Admiral Stark built and maintained close relationships with all leaders—British civilian and naval as well as those of other Allied powers—a critical trait in coalition leadership, particularly at that time.⁷ The first Airman to head a War Department general-staff division, General Andrews had served as head of Army G-3 (operations) under General Marshall. His decisions and close professional relationship with the chief of staff resulted in virtual autonomy for the Army Air Forces. As theater commander of US forces in the Middle East in 1942, he established Ninth Air Force—the first US tactical air force to taste combat. At the Casablanca conference, General Andrews received overall command of US forces in the European theater of operations, becoming responsible for directing the American strategic bombing campaign against Germany and planning the land invasion of occupied Western Europe. Two months after the initial BAFDC dinner, General Andrews died in a B-24 crash in Iceland—a loss of immense proportions. General Marshall had considered Andrews one of the nation's few great captains and later selected General Eisenhower as his successor. In January 1944, Roosevelt and Churchill added to Eisenhower's responsibilities by making him the supreme commander of the Allied Expeditionary Force for the invasion of France.⁸

When Eisenhower returned to England, he continued to support activities that helped build and maintain crucial trust and cooperation among Allies. As did most members of the BAFDC, the general demonstrated outstanding coalition leadership that turned the Allies into an effective fighting force and managed its large-scale operations. Gen Omar N.



Courtesy of the Eisenhower Presidential Library

Operation Overlord commanders at a meeting in January 1944. Left to right: Lt Gen Omar Bradley, Adm Sir Bertram Ramsay, Air Marshal Sir Arthur Tedder, Gen Dwight D. Eisenhower, Field Marshal Bernard Montgomery, Air Marshal Trafford Leigh-Mallory, and Lt Gen Walter Bedell Smith.

Bradley noted that “[Eisenhower] could work with British and Americans and keep them both fairly happy. If Ike had not had that faculty we might have been fighting each other more than we were. When you get two Allies working as closely as we were with the British, where you were brought up under different systems, there were potential cliques, but Ike kept that to a minimum. That is one of his greatest contributions.”⁹ His leadership included investing time and energy in activities such as the BAFDC that broke down barriers and increased trust and cooperation.

During the 50th anniversary of the D-day invasion, Prince Philip noted that

the success of that massive combined multi-national operation was due in no small measure to the personal friendships and understanding that developed between the members of the club at a crucial period in the planning of Operation Overlord. It says much for the spirit of the club that, in spite of many dramatic changes in the world since those days, a succession of members has continued to appreciate its value and kept it flourishing for over 50 years.¹⁰

The BAFDC met regularly at the Nuffield Club until it closed in 1975. After dining at various venues, it began a long-term relationship with the Honourable Artillery Company (the oldest regiment in the British Army, led by Her



Majesty the Queen as its captain general) and its ceremonial subunit, the Honourable Company of Pikemen and Musketeers, both of which organizations continue to host the BAFDC dinners. In May 2000, the BAFDC formed a chapter in Washington, DC, to further professional relationships between British and American personnel serving on the western side of the Atlantic.

Having established their value in the wars of the past century, coalitions should become even more important in current and future conflicts. Coalitions are useful not only militarily in fielding superior military power, but

also diplomatically in demonstrating the legitimacy of their purpose. The importance of efforts such as the BAFDC to building trust and cooperation between forces that make up those coalitions is well recognized. The observation that Prince Philip made about the club 10 years ago remains appropriate and relevant to similar efforts: "The original purpose of the club may have faded over the years, but there can be no doubt about its continuing significance in this disturbed world. I very much hope that it will go on making friendships and creating understanding for many years to come."¹¹ □

Notes

1. Born 10 June 1921, His Royal Highness Prince Philip, Duke of Edinburgh (Philip Mountbatten adopted the family name of Mountbatten when he became a naturalized British subject in 1947), is the consort of Queen Elizabeth II of the United Kingdom of Great Britain and Northern Ireland.
2. "The Birth of the BAFDC: Our History and Heritage," *British Defence Staff (Washington)*, <http://www.bds.org/bafdc>; and Edgar F. Puryear Jr., *Nineteen Stars* (Orange, VA: Green Publishers, 1971), 167.
3. Attributed to George Bernard Shaw.
4. "Birth of the BAFDC."
5. DeWitt S. Copp, *Frank M. Andrews: Marshall's Airman* (Washington, DC: Air Force History and Museums Program, 2003), 25.
6. Lt Col Michael Lee Lanning, *The Military 100: A Ranking of the Most Influential Military Leaders of All Time*

(Secaucus, NJ: Carol Publishing Group, 1996); and "Alan Brooke," *NationMaster.com*, <http://www.nationmaster.com/encyclopedia/Alan-Brooke>.

7. "Admiral Harold R. Stark, USN (1880–1972)—8th Chief of Naval Operations, 1 August 1939–26 March 1942," *Department of the Navy, Naval Historical Center*, <http://www.history.navy.mil/photos/pers-us/uspers-s/h-stark.htm>.

8. Dr. Henry O. Malone, "Paving the Way: Remembering Frank Andrews," *dcmilitary.com*, http://www.dcmilitary.com/airforce/andrews/2_09/local_news/14609-1.html; and Puryear, *Nineteen Stars*, 171.

9. Puryear, *Nineteen Stars*, 170.

10. HRH Prince Philip, "Early Years Recalled," *British Defence Staff (Washington)*, <http://www.bds.org/bafdc>.

11. Ibid.

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Anglo-American Strategic Air Power Co-operation in the Cold War and Beyond

GROUP CAPT CHRISTOPHER FINN, RAF
LT COL PAUL D. BERG, USAF

Editorial Abstract: Air power co-operation between the Royal Air Force and US Air Force serves as an excellent model of successful coalition relations and reflects the evolution of current concepts such as expeditionary air power and effects-based operations. The authors trace strategic air power relations between the United States and United Kingdom since World War II, explaining how past experience has shaped today's alliance.



BRITISH AND AMERICAN Airmen have been co-operating extensively in the field of strategic air power since before World War II when shared endeavours, such as the Combined Bomber Offensive against Nazi Germany set a precedent for close partnership. After World War II, the Cold War framed air power relations between the two countries, and the Royal Air Force (RAF) and United States Air Force (USAF) were the key players. The Cold War shaped the relationship until about 1990, but the two services continue to enjoy an exceptionally close affiliation today. Anglo-American air power co-operation serves as an excellent model of successful coalition relations and reflects the evolution of current concepts such as expeditionary air power and effects-based operations.

The Anglo-American alliance is perhaps the ultimate example of a “coalition of the willing,” but why have British and American Airmen had such an enduring propensity to work together? On one level their friendship has reflected the long-term political alliance between their two countries based on shared strategic interests. Within alliances, British and American Airmen have pooled their resources to oppose common enemies ever since they fought the Central Powers in World War I. The Axis was their common foe during World War II, and the Soviet Union filled that role during the Cold War. However, the Anglo-American air power relationship transcends opposition to shared enemies. In today’s complex world, foes are less clearly defined, yet the two air forces still integrate their operations closely. Several factors might help account for the ongoing rapport. Simple force of habit is one possible explanation. The services have co-ordinated closely for so long that they became habituated to working together. Personal friendships may be another contributing factor. Generations of Airmen have served together and formed close bonds during exercises while stationed in each other’s countries. Personnel-exchange tours have long been a staple of the relationship between the two air forces. A common lan-

guage has also facilitated friendly relations. Yet none of these explanations really accounts for the depth of the special relationship between British and American Airmen. The RAF-USAF partnership has experienced vicissitudes over the years but, like a healthy marriage, has weathered the storms. As both nations seek coalition partners today and in the future, their Airmen can profit from a retrospective study of their affiliation.

This article will examine Anglo-American strategic air power relations since World War II by considering the areas of planning and operations, organization and basing (particularly of US units in the United Kingdom), equipment (especially aircraft, missiles, and munitions), and finally joint training. However, the term *strategic air power* requires clarification. During the Cold War the idea that “strategic meant nuclear” was prevalent, but US-UK air power activities have shown the limitation of that notion.¹ The United States has indeed often stationed nuclear-capable bombers and missiles at British bases since the 1940s. In a remarkable display of trust, the United States even equipped the RAF with bombers and, later, nuclear weapons whilst the United Kingdom built its own nuclear capabilities. Today’s Airmen understand that the term *strategic* refers not to particular weapon systems, but to the level of effects those systems produce. This article discusses air and space power capable of producing effects that “influence activities at the strategic level of war and focus on national and multinational military objectives.”² For example, today’s RAF and USAF doctrines recognize the 1948–49 Berlin airlift, a combined Anglo-American operation, as an example of how non-combat air operations can produce strategic effects.³ Indeed, non-combat activities such as training and equipment have been central to US-UK air power co-operation since World War I. As Sebastian Cox explains in his article in this journal, America provided training bases for the Royal Flying Corps (RFC) (renamed the RAF in April 1917) in return for British equipment and assistance with squadron combat work-ups of US Army Air Service squadrons

on the western front in 1917 and 1918.⁴ First World War co-operation set the precedent for Second World War co-operation, when, for four years, the RAF and the US Army Air Forces (USAAF) worked together in North Africa, Sicily, Italy, and finally, the invasion of Europe. The so-called strategic air forces—Bomber Command and the Eighth Air Force—started working together in 1942 on what came to be called the Combined Bomber Offensive. The Visiting Forces Act of 1942 established the wartime status of US forces in the United Kingdom and was eventually followed by other agreements.

Anglo-American air power activities waned in the immediate aftermath of the war. By the end of 1945, there were 740 military airfields and dispersed operating sites in the United Kingdom, of which 159 were at some time occupied by USAAF units. By the end of 1946, the last USAAF unit departed for the United States; however, the Visiting Forces Act of 1942 remained extant. The first significant instance of postwar US-UK air power co-operation occurred in January 1946 when Gen Carl Spaatz, commanding general of the USAAF, and the new chief of the Air Staff (CAS), marshal of the Royal Air Force (MRAF) Sir Arthur William (Lord) Tedder, were visiting USAF bases in Britain that were about to close. Already worried about the looming Soviet threat, Lord Tedder agreed to General Spaatz's request to have five RAF bases—Marham, Lakenheath, Scampton, Bassingbourne, and Mildenhall—prepared for possible use by USAAF B-29s if required. The RAF would use its own funds to do the necessary construction work.⁵ Duncan Campbell, who puts the date of the General Spaatz and Lord Tedder visit as June–July 1946, makes the point that the "agreement was struck between the officials without public discussion or political debate of the momentous issues involved."⁶ The formation of the US Strategic Air Command (SAC) on 21 March 1946 marked another significant milestone because SAC would soon become a focal point for US-UK nuclear co-operation throughout the Cold War. Coincident with the formation of SAC, a number

of Boeing B-29 Superfortresses and B-17 Flying Fortresses went to RAF Marham to take part in Trial Ruby alongside the Lincolns of the RAF Central Bomber Establishment. Trial Ruby was to lead to the development of the radio-controlled Azon, Razon, and Tarzon bombs, the last of which was based upon the 12,000-pound RAF Tallboy bomb casing.⁷ These early precision-guided munitions were subsequently used against bridge and reservoir targets during the Korean War.⁸ The 18 September 1947 establishment of the US Air Force was a momentous event for American Airmen but had little obvious effect on Anglo-American air power relations.

General Spaatz's and Lord Tedder's fears about Soviet intentions were vindicated on 1 April 1948 when the Soviets imposed a blockade on Berlin. The Berlin airlift that followed fostered a dramatic renaissance in Anglo-American air power relations, but the fact that the two nations flew almost all the airlift missions to Berlin was only the most obvious part of the story. Whilst the story of the Berlin airlift is generally well known and was covered in a recent article in *Air Power Review*,⁹ what is less well known is the deployment of SAC B-29s to the United Kingdom in a display of Anglo-American resolve.¹⁰ On 17–18 July 1948, B-29s of the 29th and 307th Bomb Groups arrived at RAF bases Marham, Scampton, and Waddington, with another Bomb Group arriving at RAF Lakenheath in August. Whilst the B-29s were not nuclear equipped, the Soviets saw them as nuclear capable. The 3rd Air Division (Provisional) was formed to command these units for what was expected to be a detachment of only 30–60 days. However, it soon became apparent that the deployment would be long-lasting, so on 23 August 1948 the Provisional title was dropped. The 3rd Air Division moved into Bushey Park Air Station on 8 September.¹¹ During the build-up, the British supplied the Americans with airfields and facilities free of charge with the proviso that the expenditure should not exceed the normal costs of RAF requirements and standards.¹² On 13 November 1948, the temporary status of USAF units in Britain

ended with the agreement between the Air Ministry and the USAF that the long-term American use of stations in Britain should be assumed.¹³ This arrangement was regularised on 4 January 1949 when Maj Gen Leon W. Johnson, commander, 3rd Air Division, received the “financial agreement for supplies and services in the United Kingdom” from the Air Ministry.¹⁴ During the same period (on 12 November 1948), the CAS wrote to the head of Air Force Staff/British Joint-Services’ Mission, Washington, asking him to investigate the possibility of obtaining some B-29s for the RAF as interim replacements for the Lincoln bomber.¹⁵ The new USAF’s Military Air Transport Service and the RAF’s Transport Command bore the brunt of the Berlin airlift, so SAC bomber deployments were relatively “small beer.” Yet, few air operations in history can boast of greater strategic success than the Berlin airlift. Recognizing that British-American air power could supply Berlin indefinitely while portraying the Western allies as feeding people the Soviets were trying to starve into submission, the Soviets ended their blockade in 1949. At about that time, the United States, United Kingdom, Canada, and nine other nations established NATO, the military alliance that would form a centrepiece of the Cold War. Indeed, the Berlin airlift set in motion Anglo-American air power arrangements that would endure for many years.

Although airlift planes flew the Berlin airlift, most American and British Airmen viewed the B-29, the plane that had bombed Hiroshima and Nagasaki, as the symbol of strategic air power during the incipient phase of the Cold War. Therefore, Airmen sought to demonstrate their bombing prowess with the B-29. In May 1948, shortly before the Berlin airlift began, Maj Gen Clements McMullen, SAC deputy commander, announced the inception of a bombing competition to encourage SAC crews to develop their navigational and weapon-aiming accuracies. In June 1948, three crews from each of SAC’s 10 B-29 groups met at Castle Air Force Base (AFB), California, to compete in the command’s first bombing

competition. The competition was a very simple one where each crew was required to drop three visual and three radar-laid bombs from 25,000 feet. The disappointing results, with groups’ circular-error averages ranging from 1,065 feet to 2,985 feet, led Gen Curtis E. LeMay, when he took command of SAC in October 1948, to embark on his hard-driving professional reforms to ensure the accurate delivery of nuclear weapons, which was to be the command’s primary role in case of war.¹⁶ The SAC bombing and navigation competition became an annual event but was a US-only affair until 1951 when two RAF Washingtons (B-29s) participated. At the end of 1951, SAC aircraft deployed to RAF Sculthorpe to participate in the Bomber Command bombing competition.¹⁷ Meanwhile, the two air forces conducted combined air exercises, such as Operation Dagger, the first joint RAF-USAF air defence exercise, which happened in the United Kingdom in September 1948.¹⁸

The Korean War punctuated the second half of the Cold War’s B-29 era, but a number of British-American air power events preceded the outbreak of fighting. In October 1949, the ABC Conference in Washington reached a significant decision when the American, British, and Canadian representatives agreed that the air defence of Great Britain would be an RAF responsibility, whilst the USAF would increase the number of bomber units operating from UK bases. This decision was made only days after the first Soviet atomic explosion was reported.¹⁹ On 22 March 1950, the first B-29s to be provided to the RAF under the Mutual Defence Assistance Programme arrived at RAF Marham. The following month, US ambassador Lewis Douglas and UK under secretary for air Aidan Crawley agreed that, because East Anglian bases were deemed too vulnerable to Soviet air attack, four Midlands bases at Upper Heyford, Greenham Common, Brize Norton, and Fairford should be developed for SAC use. Whilst the initial tranche of 70 B-29s was delivered, the second tranche was reduced from 124 to 17 due to the demands of the Korean War, which started in June 1950, and the entry into service of the

Canberra bomber in 1951.²⁰ This latter aircraft was to provide a rare example of American licence production of a British aircraft; as the Martin B-57, it saw service in Vietnam. On 16 January 1951, six of SAC's new B-36 strategic bombers were deployed to the United Kingdom in just four days.²¹

The Korean War era coincided with the commencement of strategic reconnaissance operations from the United Kingdom, initially using the RB-36D model, that sometimes staged through Mildenhall, Lakenheath, and Sculthorpe.²² Aerial reconnaissance of the USSR and Eastern Europe quickly became a perennial Cold War activity that entailed very close Anglo-American co-operation. In May 1954, B-47 reconnaissance operations commenced from RAF Fairford, solidifying the pattern of Cold War reconnaissance operations from the United Kingdom that would continue with aircraft such as the U-2, SR-71, RC-135, and specially modified C-130s.²³ These planes fought a protracted and sometimes deadly war in the shadows to gather information about military developments in Soviet-controlled territory.

The increasing US presence in the United Kingdom was recognised by the inception of the Special Construction Programme in February 1951 and the Visiting Forces Act of 1952. The Special Construction Programme called for an additional 26 USAF bases to be established in the United Kingdom.²⁴ On 20 March 1951, the 7th Air Division (SAC) formed at South Ruislip as a SAC command in the United Kingdom.²⁵ More importantly, on 1 May 1951 the 3rd Air Division was upgraded to the Third Air Force, and the subsequent "Joint Transfer Agreement" established the relationship between the United States Air Forces in Europe (USAFE) and SAC responsibilities in the United Kingdom.²⁶ As a result of the additional bases programme and the USAFE-SAC split, the runways at Upper Heyford, Greenham Common, and Brize Norton were extended, and B-36 deployments to those bases commenced in 1952.²⁷ The Visiting Forces Act of 1952 stemmed from a 1952 Churchill-Truman protocol for joint consultation on the

use of British-based US forces. The act was the British part of the NATO Status of Forces Agreement and remains in effect today.²⁸

The period from 1952 to 1966 was characterized by nuclear co-operation and the introduction of jet aircraft. The first example was the loan, actually starting in 1951, to the RAF of four RB-45Cs for what was known as the Special Duties Flight.²⁹ In April 1952 and again two years later, this reconnaissance unit performed radar photography over the Soviet zone of Germany and latterly over the Kiev area of the USSR itself, gathering information that would have helped bombers find targets in the event of war. June 1953 saw the first SAC B-47 Wing (306th Bomb Wing) deployed to RAF Fairford, marking the end of the B-29 wing rotations. Three months later, a UK-US agreement was signed by the UK secretary of state for air and the US ambassador, which consolidated previous construction agreements and, perhaps more importantly, established a cost-sharing basis.³⁰ The end of the Korean War in 1953 had little noticeable effect on the USAF's build-up in Europe. American concerns that the aftermath of the Korean War could escalate into a nuclear conflict with China and the USSR, stimulated by the destruction of two US reconnaissance aircraft by Chinese fighters in the summer of 1954, caused the USAF to be placed on a high-alert state. The alert posture generated tensions between the USAF and its British hosts. The intensity of flying and the potential for disastrous outcomes were exemplified when a B-47 crashed one-and-one-half miles from RAF Upper Heyford, leading to considerable protest from local communities.³¹ At the same time, USAF nuclear weapons were brought to the United Kingdom for the first time and stored on USAFE and SAC bases.

However, as the American nuclear deterrent became established, Cold War tensions shifted, and there were significant changes in the USAF posture between 1955 and 1958. In Britain the emphasis was much more on the tactical forces of USAFE, and because of concerns about the vulnerability of the United Kingdom to Soviet attack,³² the 7th Air Divi-

sion's strength was reduced by almost half. In 1955 90-day SAC bomber rotational operations switched to much shorter ones, simulating poststrike recovery to UK bases.³³ One result was Plan 57-3, the "Big Shuffle," which involved closing 10 bases in a consolidation of USAFE and SAC operations onto main operating bases and returning a myriad of other units to Air Ministry control.³⁴ The final step in this process was the 8 January 1958 commencement of the SAC Reflex operations at RAF bases Greenham Common and Fairford, which involved small numbers of aircraft from several wings rather than complete wing deployments.³⁵ B-47s involved in these deployments took part in two major air defence exercises—Buck Board and Grab Hook—in which B-47s flying at 35,000–40,000 feet approached the United Kingdom on realistic threat axes to be intercepted by the Hawker Hunter F6s of Fighter Command.³⁶ Whilst US nuclear weapons were being deployed in the United Kingdom and the SAC posture was shifting, things were finally changing for RAF Bomber Command with the 1955 entry into service of the first of the strategic jet bombers or "V-Bombers," the Valiant, and with the decision in July of the previous year that a UK thermo-nuclear bomb should be produced.³⁷ If the two air forces were to gain maximum advantage from increasing RAF bombing capabilities, they needed closer co-ordination of their nuclear planning. A September 1955 meeting between the CAS, MRAF Sir William Dixon, and his opposite number, Gen Nathan F. Twining, chief of staff, USAF (CSAF), sowed the seeds for integrated Anglo-American nuclear targeting, not least to avoid wasteful duplication of effort. Subsequently, a team of senior USAF officers visited the Air Ministry in London to discuss the provision of American nuclear weapons for the V-Force in the event of war and the co-ordination of nuclear strike plans.³⁸ These offers were finalised in a note from Charles Wilson, the American secretary of defense, to his opposite number Duncan Sandys:

I agree that it is appropriate for you to authorize the Chief of the British Air Staff to discuss with

the Chief of Staff of the United States Air Force and with General Lauris Norstad (SACEUR) [Supreme Allied Command, Europe] the arrangement for implementing measures:

1. To furnish the Royal Air Force with United States atomic bombs in the event of general war; and
2. To co-ordinate the atomic strike plans of the United States Air Force with the Royal Air Force.³⁹

This offer was then followed up by an exchange of memoranda between the CSAF to the RAF CAS and more detailed discussions including plans for providing US nuclear weapons for NATO.⁴⁰ As a result of these meetings, a fully integrated nuclear war plan was produced by Bomber Command and SAC staffs "taking into account Bomber Command's ability to be on target in the first wave several hours in advance of the main SAC force operating from bases in the United States."⁴¹ In this initial plan, which was to be reviewed annually, Bomber Command was allocated 106 targets. However, Anglo-American nuclear planners faced the problem that neither SAC nor Bomber Command was willing, or indeed able, to reveal to its partners the yields of the weapons allocated to specific targets, leading to a comment in 1960 by Air Marshal Sir Kenneth Cross, the air officer commanding in chief, Bomber Command, that "in this area alone there is a barrier to co-ordination and duplication and wastage is inevitable until American legislation is altered."⁴² What made this co-operative venture even more remarkable was that it proceeded despite the 1956 Suez Crisis when Britain, France, and Israel intervened in Egypt to prevent Egyptian president Gamal Abdel-Nasser from nationalizing the Suez Canal. American president Dwight D. Eisenhower strongly condemned the venture, and following American diplomatic and financial pressure, the British, French, and Israelis aborted the operation. The Suez Crisis was clearly a rough spot in US-UK relations but fortunately proved only a temporary problem.

One brighter aspect of weapons co-operation was "Project E," by which US nuclear weapons would be provided for carriage on the Valiant and the Canberra. The Valiant Force of 72

aircraft at RAF bases Marham, Waddington, and Honington was equipped with the US Mk 5 weapon.⁴³ The Mk 7 weapon was also provided for Canberras operating both within Bomber Command and RAF Germany.⁴⁴ This arrangement continued until 1963 for the weapons in Bomber Command and 1969 for those in RAF Germany. However, the weapons had to be under US national custody, which limited the ability of Bomber Command to disperse its assets.⁴⁵ This problem became significant when in response to the October 1962 Cuban missile crisis, the RAF's tactical bomber force, which then comprised the three SACEUR-assigned Valiant squadrons at RAF Marham, was to be loaded with nuclear weapons. It rapidly became apparent that there were insufficient American custodial officers to maintain control of the weapons. In this case the commanding general of USAFE allowed the weapons to be handed over to the station commander of RAF Marham, an act that exemplified the remarkable trust that had grown up between the two air forces by that time.⁴⁶

Nuclear weapons co-operation extended beyond aircraft systems. In what was perhaps a unique arrangement, the United States loaned Britain 60 Thor intermediate range ballistic missiles (IRBM) from 1959 to 1963, as covered in an inter-governmental agreement of 22 February 1958.⁴⁷ Twenty-four IRBM sites, all ex-World War II airfields, which in some cases had for a second time been requisitioned from their owners, were established in the United Kingdom. The agreement provided that the missiles would be manned and operated by RAF units, that the nuclear warheads would again remain in American custody, and that a joint decision by both governments was required to launch the missiles. Whilst the United States would supply the missiles and specialised equipment and training for the RAF personnel, the British would provide the infrastructure at an estimated cost of £10 million.⁴⁸ The agreement was to last for only five years and in effect covered the gap while Britain fielded its own thermonuclear weapon. The Thor IRBM had a range of some 1,500 miles with a nominal one-megaton warhead. To demonstrate the

missiles' effectiveness, training firings of missiles from the manufacturer and, later, proving firings of missiles drawn from operational RAF sites were conducted in the United States. A non-nuclear parallel to the Thor Agreement was the US funding of RAF Regiment Rapier short-range air defence squadrons from the mid-1970s to the mid-1990s to defend USAF main operating bases in the United Kingdom. A year after the Thor Agreement was signed, a further inter-governmental agreement permitted one of the three ballistic missile early warning system (BMEWS) stations to be built at Fylingdales in North Yorkshire.⁴⁹ Paradoxically, Fylingdales became operational on 1 September 1963 just as the Thor sites were being deactivated.⁵⁰

Additional changes took place in the air power realm during the late 1950s and early 1960s. The B-52 bomber had taken over as SAC's primary nuclear-alert aircraft, and the B-47s were now seen, rather like the Valiants, as medium bombers on 15-minute ground alert.⁵¹ The new KC-135 jet-powered aerial-refuelling tankers replaced the propeller-driven KC-97 tankers, greatly extending bomber range. The B-52s took part in the SAC bombing competition for the first time in 1956, and after a four-year break, the RAF returned in 1957 to compete with Valiants and Vulcans.⁵² The following year two Valiant teams, each comprising two aircraft and four crews, competed with the B-52s and did particularly well, one placing seventh overall and the other 20th out of 41 teams.⁵³ However, in 1959 and 1961, RAF Valiants and Vulcans, and then Vulcans only, participated in Exercises Eye Washer and Sky Shield respectively, these being United States and Canadian air defence exercises. In Eye Washer, only one of the six RAF aircraft flying over Canada at 42,000 and 48,000 feet was intercepted.⁵⁴ Clearly, American and Canadian Airmen had more work to do in the air defence realm.

If Project E and Thor marked the zenith of Anglo-American nuclear-weapon co-operation, we now come to the nadir—Skybolt. In 1960 the British and American nuclear programmes were becoming subject to the same constraints

of cost, survivability of static missile sites (particularly in the United Kingdom and Europe), and survivability of aircraft at high level due to steadily improving Soviet surface-to-air missiles (SAM) and air defence fighters. A further concern for the British was the maintenance of an independent nuclear capability. If one is to understand the significance of Skybolt, a brief explanation of the status of UK airborne nuclear weapons is necessary. As previously explained, the Valiants of the SACEUR-assigned tactical bomber force were equipped with American nuclear weapons. These aircraft were soon to be withdrawn from service due to airframe fatigue. The other V-bombers, the Vulcans and Victors, were armed with British-built bombs, such as Blue Danube and the megaton-yield Yellow Sun Mk 2.⁵⁵ Other Vulcan and Victor squadrons were equipped with the air-launched, nuclear-tipped Mk 1 Blue Steel stand-off missile. An extended-range Blue Steel was cancelled in January 1960, as the United Kingdom did not have sufficient research and development capacity to develop that weapon and bring the Mk 1 Blue Steel into service simultaneously.⁵⁶ Four days after the cancellation of the extended-range Blue Steel, the British ballistic missile, Blue Streak, was also cancelled on grounds of cost and obsolescence.⁵⁷ The cancellation of Blue Streak was also influenced by the potential of the American Skybolt design, an airborne-launched ballistic missile, to provide a nuclear-deterrent weapon launched from outside of Soviet-fighter and SAM cover from airborne alert aircraft. After talks between Prime Minister Harold Macmillan and President Eisenhower on 28–29 March 1960 at Camp David, during which the Americans indicated their willingness to provide Britain the Skybolt and potentially the submarine-launched Polaris missile as well, the British government confirmed the cancellation of Blue Streak.⁵⁸ Yet little more than two years later, at the Nassau Conference in December 1962, Pres. John F. Kennedy formally notified Prime Minister Macmillan of Skybolt's cancellation.⁵⁹ The technical and financial agreement of 27 September 1960 between the UK Ministry of Aviation and the US

Department of the Air Force had committed both parties to the co-operative development of the Skybolt missile but interestingly stated that "it is understood that at this time this is purely a research and development programme, no production having been authorised by our authority."⁶⁰ Having burnt their bridges with regards to national alternatives, the British enthusiasm for the Skybolt project is understandable, but the programme contained high-technological and cost risks. Subsequently in an *aide memoire* to UK minister of defence Peter Thornycroft, US secretary of defense Robert McNamara explained why the US government had reached a "tentative conclusion" that the Skybolt programme should be abandoned. Whilst other options, such as a UK-only Skybolt programme or an Anglo-French collaborative programme, were considered, the project was effectively dead once the Americans had decided to withdraw funding; thus, Polaris was the only alternative. The implication for the RAF was that it lost the UK strategic-deterrent role on 1 July 1967 when the submarine-launched Polaris missile became operational. Furthermore, because of the very short range of the Mk 1 Blue Steel—only 100 nautical miles from high altitude—it was clear that a British-built bomb suitable for low-altitude delivery would be required for the Vulcans and Victors.⁶¹ Finally, in July 1965, an order was placed for 158 General Dynamics lightweight, terrain-following radars for those aircraft, confirming the shift from high-altitude to low-altitude operations that was to become the hallmark of the RAF nuclear and conventional attack forces for the next 25 years.

The early 1960s also saw changes in the planning and organization of nuclear operations, the first of these being the formation in August 1960 of the Joint Strategic Target Planning Staff (JSTPS) at Headquarters SAC, Offutt AFB, Nebraska. The JSTPS's role was to produce and maintain a national strategic target list and the Single Integrated Operational Plan (SIOP). UK systems were included within this plan.⁶² Furthermore, on 23 May 1963, the RAF V-Force was formally assigned to SACEUR

for targeting, planning, and co-ordinating execution of nuclear missions, in the NATO equivalent of the SIOP.⁶³ On 1 April 1965, the SAC Reflex operation detachments in the United Kingdom were terminated.⁶⁴ As a result of this, RAF Brize Norton was returned to RAF control, but RAF Upper Heyford was retained for Third Air Force operations. The end of SAC's large-scale operations in the United Kingdom was marked on 30 June 1965 with the disbandment of SAC's 7th Air Division.⁶⁵ However, just before this, on 18 April 1965, for the second successive year, the Campaign for Nuclear Disarmament Sunday protest march passed the South and West Ruislip USAF bases. These antinuclear protests were foretastes of what was to come.

The late 1960s witnessed continued change and turbulence. US basing in the United Kingdom became a key issue again on 13 March 1966 when France announced its decision to withdraw from the NATO-integrated military structure, which meant all NATO headquarters and forces were to leave France by 1 April 1967. Many of the US units displaced from France relocated to UK bases. Meanwhile, on 30 April 1968, RAF Bomber Command merged with Fighter Command to form a new Strike Command. That RAF reorganization did not appreciably alter Anglo-American air or space power co-operation, but did foreshadow a similar USAF reorganization that would occur 24 years later. American involvement in the Vietnam War was unpopular in Britain, yet Anglo-American air power relations remained cordial. Adjustments made in the late 1960s established the USAFE basing structure that remained almost unchanged for the final 25 years of the Cold War. One notable change was the June 1972 movement of Third Air Force to RAF Mildenhall, where it remains today. However, the last move of new US forces into the United Kingdom would be entirely strategic in nature.

East-West tensions moderated slightly during the early 1970s as Pres. Richard Nixon engaged in a policy of détente and arms-control negotiations with the USSR, but the thaw proved temporary. The end of the Vietnam

War in 1973 removed a point of US-UK tension. When the USAF began its Red Flag exercises, the RAF was invited to participate for the first time in August 1977 and has continued to do so ever since. That same year Soviet deployment of mobile SS-20 missiles upset the whole nuclear balance in Europe, leading to a NATO decision in 1979 to replace the Pershing IA nuclear missiles based mostly in West Germany with the far more accurate Pershing II. In addition 464 ground launched cruise missiles (GLCM) were to be deployed in a number of NATO nations, including the United Kingdom.⁶⁶ The 1979 Soviet invasion of Afghanistan contributed to Pres. Jimmy Carter's withdrawal from the SALT II negotiations, embagoing of wheat and technology exports, and finally, in 1980, commencement of a massive force build-up, spelling the end of détente.⁶⁷ The Pershing II and GLCM deployments were entirely in accord with the policies of President Carter and Pres. Ronald Reagan, who came to office in January 1981. As part of President Reagan's policy to force the Soviets into an unwinnable arms race, the planned deployments of GLCMs to RAF bases Greenham Common and Molesworth met with significant protests, in particular the so-called peace camps, which were not limited to these two sites. RAF Regiment, RAF police, Ministry of Defence police, and civilian police forces all participated in extensive security operations around RAF Greenham Common in particular, which received its first GLCMs in May 1983. Reagan's strategy eventually succeeded. Following the signing of various arms-reduction agreements, the GLCMs were withdrawn in 1987, foreshadowing the end of the Cold War.

Anglo-American air power co-operation continued during the Cold War's final years. The 1982 Falklands War between Argentina and Great Britain was a delicate matter for the Americans because it involved two nations that were friendly to the United States. However, the United States provided the United Kingdom with weapons such as the AIM-9L Sidewinder air-to-air missile and the Shrike anti-radiation missile. It also upgraded the

infrastructure at Wideawake Airfield on Ascension Island and provided 12.5 million gallons of jet fuel. The United States also discretely provided intelligence data.⁶⁸ Finally, it deployed KC-135 tankers to RAF bases Fairford and Mildenhall to cover the gap in NATO forces left by the UK deployment of Victor tankers to Ascension Island.⁶⁹ The quid pro quo came just four years later on 14 April 1986 when the British supported the US Operation El Dorado Canyon bombing raid against Libya. A response to a series of Libyan-sponsored terrorist attacks, the operation involved the US Air Force and Navy and included the deployment of 38 KC-10 and KC-135 tankers under the guise of a NATO exercise. In addition to the tankers, the UK-based attack force comprised 15 F-111s and three EF-111s.⁷⁰ The highly successful mission, which lasted over 12 hours, was only mounted after joint consultation and with the express permission of Prime Minister Margaret Thatcher.⁷¹

The end of the Cold War did not dim Anglo-American strategic air power co-operation but did change its nature. Nuclear co-operation received less emphasis as attention shifted to handling regional contingencies. American and British Airmen seldom flew combat missions together during the Cold War, but they did during the 1991 Gulf War to eject Iraq from Kuwait. Here the years of training together, particularly on exercises like Red Flag, paid dividends with composite RAF/USAF formations being the norm and RAF aircrew integrating easily into the USAF Air Component Headquarters in Riyadh. The United Kingdom also permitted US bombers and other aircraft to use British facilities in the United Kingdom and on the British-owned island of Diego Garcia in the Indian Ocean. Then on 1 June 1992, in a move reminiscent of the 1968 merger of RAF Bomber and Fighter Commands, the USAF Strategic Air Command merged with Tactical Air Command to form a new Air Combat Command. Like the 1968 RAF reorganization, that change had little apparent effect on US-UK relations. Although the USAF and RAF underwent significant force cuts and base closings during the 1990s, close

co-operation continued in response to crises in Bosnia and Kosovo.

The decade between the dissolution of the USSR in 1991 and the fateful events of 2001 turned out to be an interwar era that ended with American and British Airmen once again confronting a common enemy—this time in the war on terror. The RAF has continued to fly with US Airmen and provide US access to bases in the United Kingdom, Cyprus, and Diego Garcia during Operation Enduring Freedom in Afghanistan and Operation Iraqi Freedom.

A number of trends emerge from the Anglo-American air power co-operation record of accomplishment since World War II. For one thing, the two countries have enjoyed an uncommonly close partnership for a long time. Common strategic interests in opposing foes like the USSR and international terrorists go a long way towards explaining the partnership. Combined planning, personnel exchanges, and training events like bombing competitions and Red Flag war games have honed US-UK co-ordination to a fine edge. British willingness to host US forces on their territory decade after decade and both nations' willingness to share equipment have reflected the depth of co-operation between the two nations. Only truly close friends share their ballistic missiles, bombers, and nuclear warheads. The weapons were often of American design, but the British Canberra bomber, which served in the USAF as the B-57, was an exception.⁷²

Anglo-American air power relations have successfully weathered serious political tensions because leaders have focused on strategic goals. Basing US bombers and missiles on British soil certainly made Britain a target in the event of a nuclear war. British voters voiced their concerns, so British politicians had to exercise strong leadership to follow through on agreements to host US aircraft and especially GLCMs. The bombers and tankers flew frequently, generating noise and air-traffic congestion. Risky American reconnaissance flights flown from British airfields also tested the mettle of British political leaders. The GLCMs were a lightning rod for antinuclear protesters. Unfortunate political incidents like the

1956 Suez Crisis and the Skybolt missile cancellation in the 1960s tested relations yet also proved the durability of the partnership. Other potentially disruptive events such as the establishment of the USAF in 1947, the Vietnam War, formation of Strike Command, and formation of Air Combat Command had minimal effect on US-UK air power relations. These facts suggest senior US and UK political and military leaders have been focusing on the long-term strategic effects they wish to create in the world and have been able to overcome short-term problems.

The partnership has also reflected changes in the USAF view of expeditionary air power. The Berlin airlift included combat units deploying to forward operating locations for short periods. However, as the Cold War became entrenched, forward-deployed bomber units transitioned to permanent forward garrisons. Ballistic missiles and longer-range air-refuelled bombers heralded another shift in the 1960s when US bomber units redeployed from permanent bases in the United King-

dom to permanent bases in the United States. Geography determined that most expeditionary aspects of US-UK air power involved USAF units operating from British territory, but the RAF routinely flew exercises such as Red Flag from US territory. The war on terror has featured US air units staging from forward bases, sometimes in British territory, for short periods in a style reminiscent of the Berlin airlift era. Whether the war on terror devolves into a protracted Cold War-style affair with the USAF again settling into fixed forward-operating bases remains to be seen.

The United States and Great Britain are true friends with continuing mutual interests, so the future of their air power relationship looks bright. The USAF-RAF example is a useful model of international co-operation that illustrates what can happen when two nations and their air forces choose to work together and may prove instructive to those who seek to build "coalitions of the willing" composed of Airmen from other nations. □

Notes

1. Air Force Doctrine Document (AFDD) 2-1.2, *Strategic Attack*, 30 September 2003, 29.
2. US Joint Forces Command, *Joint Forces Command Glossary*, <http://www.jfcom.mil/about/glossary.htm#S>.
3. AFDD 2-1.2, *Strategic Attack*, vii and 6.
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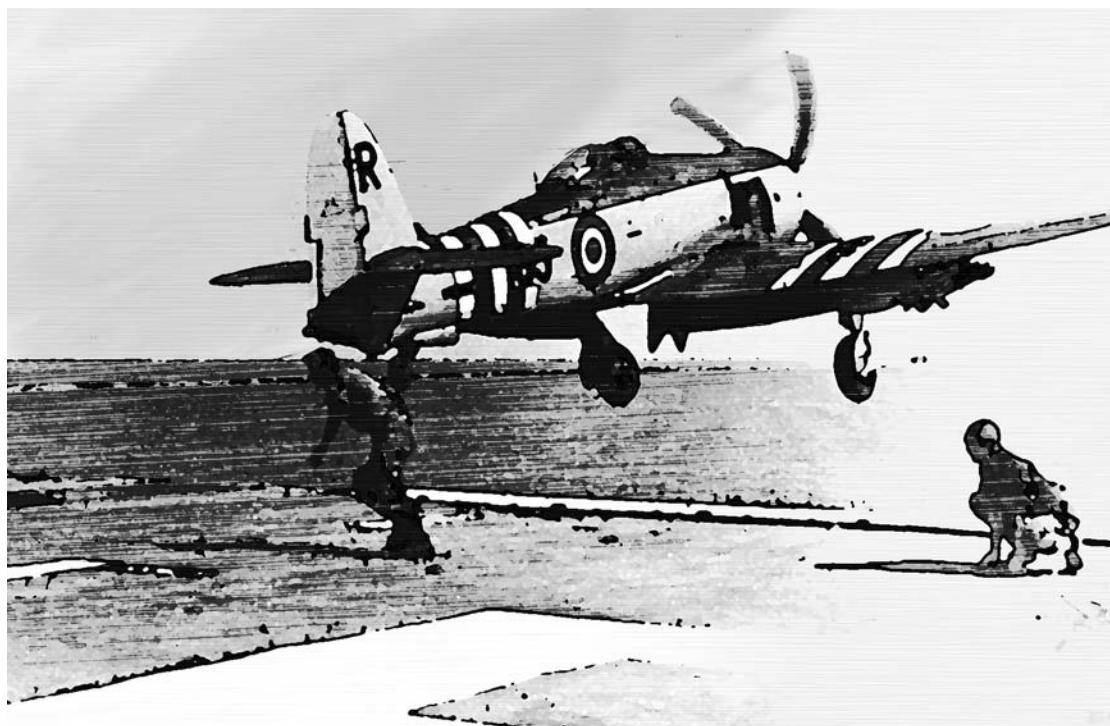
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British Commonwealth Carrier Operations in the Korean War

CDR DAVID HOBBS, MBE, RN

Editorial Abstract: The Korean War was also a major maritime effort in which the United Nations depended on control of the sea for the transport of troops, their logistical support, and for the provision of tactical air power. One Australian and five British light fleet carriers alternated to carry out strike operations against tactical targets ashore and to enforce the sea blockade for three years. Their remarkable performance brought many squadrons, and their people, to a high pitch of professionalism and efficiency, the most conspicuous aspect of the Commonwealth contribution to the United Nations.



Background

In 1950 the Royal Navy (RN) was still recovering from a shortage of manpower following the rundown after World War II. Few ships had their war complement embarked al-

though those deployed to the Far East were more capable than those on the home station. Naval air squadrons were short of aircrew and maintainers and were still using up stocks of obsolete wartime aircraft as production of new types moved slowly. Fortunately, a number

of people with war experience had been retained. The Far East Station covered a vast area with significant responsibilities.

The Royal Australian Navy (RAN) formed its Fleet Air Arm in 1948 with a great deal of British help and only recently had taken delivery of its first carrier and embarked air group. Many of its airmen had wartime experience with the RN or Royal Australian Air Force (RAAF).

The Royal Canadian Navy had also recently formed a Fleet Air Arm with a light fleet carrier on loan from Britain but did not deploy it to Korea. A potential plan to embark a Canadian Sea Fury squadron in a British carrier was not acted on.

The Outbreak of War

The North Korean People's Army (NKPA) advanced, almost at will, through the South Korean defences after its surprise attack on 25 June 1950. On 27 June, Pres. Syngman Rhee and his government left Seoul, and it must have seemed to the Communist commanders that the war was already won. However, in their plans they had left one factor out of their calculations that was to prove their ruin—sea power. The reaction of the United Nations (UN) to this aggression was swift and unambiguous, allowing allied navies to exert relentless pressure on North Korea.

In the summer of 1950, the British Far East Station was commanded by Adm Sir Patrick Brind, RN, who flew his flag at a shore headquarters in Singapore. Much of the operational fleet, fortuitously, was in Japanese waters under the operational control of Rear Adm Sir William G. Andrewes, RN, flag officer second in command, Far East Fleet (FO2FEF), in the cruiser HMS *Belfast* (C35). They had recently carried out a number of exercises with US Navy (USN) warships under the command of Vice Adm C. Turner Joy, USN, commander US Naval Forces Far East (COMNAVFE). The British Task Force included the light fleet carrier HMS *Triumph* (R16), the cruiser HMS *Jamaica* (C44), and a number of destroyers, frigates, and logistic ships including a hospital ship.

On hearing of the invasion, Admiral Andrewes sailed on his own initiative at 0130 on 26 June, giving orders to his force to concentrate in southern Japanese ports. On 27 June, the UN Security Council described the NKPA attack as "a breach of [world] peace" and authorised member nations to assist the Republic of Korea.¹ The British government's decision to support the security resolution was announced by Prime Minister Clement Attlee in the House of Commons on 27 June. On the next day he announced that British naval forces in Japanese waters were placed at the disposal of US authorities to act on behalf of the UN Security Council. The Canadian government immediately offered naval support, followed on 29 June by the governments of Australia and New Zealand. Orders from the Admiralty were sent directing the commander in chief Far East "to place the Royal Navy at present in Japanese waters at the disposal of the US Naval Command."² Admiral Brind had already offered the use of his fleet to Admiral Joy for "any humanitarian mission" and warned Admiral Andrewes that he might soon be called on for action under the UN Charter.

Commonwealth naval units were rapidly assimilated into the US command structure. COMNAVFE, Admiral Joy, placed Admiral Andrewes in command of Task Group 96.8, the West Korean Support Group, which comprised mainly Commonwealth and allied ships. Rear Adm John M. Higgins, USN, was placed in command of the mainly USN East Korean Support Group. HMS *Triumph* joined Task Force 77 of the US Pacific Fleet off Okinawa where Rear Adm John M. Hoskins, USN, commander Carrier Division 3 in USS *Valley Forge* (CV-45), took tactical command of the force. Planning for a combined strike against targets in North Korea started at once, and the task force moved to the operating area. American signal procedures were adopted at once, and no difficulty was found in working with the USN. Admiral Andrewes later wrote, "It all seemed so familiar as it was just what we had done so often before during the exercises in March with very similar forces." Also, it was only five years since the US and British Pacific fleets

had worked together so successfully in the final phase of the war against Japan.

The First Carrier Strike

The first naval air strikes of the war were flown off between 0545 and 0615 on 3 July from USS *Valley Forge* and HMS *Triumph*. Sixteen F4U Corsairs, 12 AD-4 Skyraiders, and eight F9F-2 Panthers from USS *Valley Forge* attacked Pyongyang and other airfield sites, destroying 15–20 aircraft on the ground and two in the air. Twelve Fireflies and nine Seafires from HMS *Triumph* armed with rockets attacked Haeju Airfield, damaging hangars and buildings, but no aircraft were sighted. All the aircraft returned safely; flak had been negligible, but slight damage had been inflicted on some aircraft by small-arms fire.

Both navies had been at pains after 1945 to work out common operating procedures, and these, enhanced by cross-deck operations in the recent exercises, worked well. On 4 July, aircraft from USS *Valley Forge* attacked two gunboats in the Taedong estuary, destroying one small railway bridge, damaging another, and destroying 15 railway locomotives and a significant amount of rolling stock. Aircraft from HMS *Triumph* attacked the railway between Yonan and Haeju, scoring two hits on a bridge. Targets of opportunity, including a column of marching troops, were attacked. Two American and one British aircraft were damaged by flak.

The choice of targets for the British aircraft was severely limited by the poor radius of action of the early mark of Firefly operated by HMS *Triumph*'s 14th Carrier Air Group (CAG) and the limited strike capability of the Seafire 47 that was primarily an air defence fighter. An unfortunate incident occurred on 28 July 1950 when the Fleet Air Arm suffered its first casualty of the war. Commissioned Pilot White of 800 Naval Air Squadron was shot down in his Seafire by a USAF B-29 "for no very apparent reason." Mr. White was picked up, suffering from burns, from his dinghy by a USN destroyer and transferred to HMS *Triumph* later in the day. Commenting

on the incident, COMNAVFE later said, "The calculated risk of damage to friendly forces must be accepted."

Carrier Operations

Like all wars in the modern era, this was a maritime war with the UN utterly dependent on the sea for the transport of troops, supplies, and, to a very large extent, air support. Control of the sea allowed a firm beachhead around Pusan to be established and maintained. HMS *Triumph* suffered a leaking stern gland and was replaced in Task Force 77 by USS *Philippine Sea* (CV-47), a more potent strike carrier. After repairs, she joined the West Coast Task Force where British and Australian carriers were to operate for much of the remainder of the war. Although less capable than her USN counterparts, HMS *Triumph* played a key role in the war by being in the right place at the right time, and her contribution was, thus, more significant than that of forces who were too far away.

In September HMS *Triumph* played a small part in the covering force during the landings at Inchon that transformed the war. By then her elderly air group had become increasingly difficult to maintain, and she was due for replacement.

Relieving her was HMS *Theseus* (R64), a sister ship which carried the 17th CAG equipped with squadrons of very capable Sea Fury and Firefly FR5 aircraft. Her squadrons were kept busy flying combat air patrols over inshore forces, strafing mine-laying junks, and supporting troops ashore. By November it seemed that the war was nearly over, and *Theseus* was allowed to leave the combat zone when UN forces moved close to the Yalu River. She was hastily recalled when Chinese troops infiltrated into Korea and struck hard at UN ground forces.

A pattern of operations emerged in which the British carrier off the west coast alternated with a USN light carrier, and friendly rivalry led to a constant improvement in both navies' war-fighting capability. When not on patrol, the British ship would return to the



Sea Fury aircraft

Commonwealth base port at Sasebo to take on replacement aircraft and ammunition and give leave for the rest and recreation of the ship's company. A patrol typically comprised 10 days at sea with a day refuelling and rearming at sea in the middle.

HMS *Theseus* operated throughout the bitterly cold winter of 1950–51 despite gales, hail, snow, and poor visibility. In December the air group was only able to fly on 17 days but managed 630 sorties without accident. By February the sortie tally had risen to 1,500, testimony to the ruggedness of the aircraft and the skill of the pilots. The 17th CAG was awarded the Boyd Trophy for 1950. This was instituted by Rear Adm Sir Denis Boyd, RN, the wartime captain of HMS *Illustrious* (R87) of Taranto fame, and is awarded for the most outstanding feat of naval aviation in a given year. Until his death in 1965, Admiral Boyd usually presented the trophy in person.

As spring succeeded winter, less wind and a heavy swell gave deck landing a lively interest, but the accident rate remained commendably low. The loan of a USN helicopter for combat search and rescue (SAR) duties in place of the obsolete Sea Otter biplane flying boat had an outstanding effect on aircrew morale. Five aircrewmens were rescued within minutes of ditching in its first few weeks of operation.

This is an appropriate point to mention the maintenance carrier HMS *Unicorn* (R72), which served throughout the war in support of the operational carriers. She ferried hundreds of replacement airframes from the main

British bases at Singapore and Hong Kong, used her extensive workshops to repair battle-damaged aircraft, and transported thousands of Commonwealth troops to and from Korea. She even carried out a bombardment of NKPA positions ashore with her four-inch guns on one sortie. Despite her largely second-line tasking, she had a fully functional flight deck and often gave deck-landing practice to replacement pilots and acted as a "spare deck" for the operational carriers. Replacement aircraft were ferried from the United Kingdom to the Far East in the light fleet carrier HMS *Warrior* (R31).

In April 1951, HMS *Theseus* was relieved by HMS *Glory* (R62) having carried out 3,500 operational sorties in 86 flying days over seven months. The light fleet carriers were built to an austere specification in World War II and had many disadvantages including lack of speed, liveliness in rough weather, and recurrent trouble with the single catapult. Despite that, they succeeded in operating with an intensity and skill which Rear Adm Alan K. Scott-Moncrieff, RN, who had relieved Admiral Andrewes as FO2FEF on his promotion to vice admiral, was able to report to his commander in chief as being praised highly by the USN.

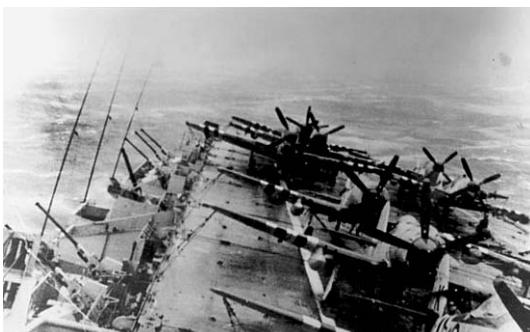


HMS Glory (R62)

HMS *Glory*, another of the ubiquitous light fleet carriers, carried the re-formed 14th CAG equipped with Sea Furies and Firefly FR5s, which were to be the standard Commonwealth carrier fighter-bombers for the rest of the war. Her first patrol coincided with the Chinese spring offensive in which the 1st Battalion of

the Gloucestershire Regiment was almost annihilated defending a position of the Imjin River and the British 27th Brigade, and the US 5th Cavalry Regiment fought memorable delaying actions near Kapyong. In the summer, talks about an armistice began, and the land war became static, based on lines of trenches reminiscent of the First World War.

In September 1951, HMS *Glory* was relieved by Her Majesty's Australian Ship (HMAS) *Sydney* (R17), the first Commonwealth carrier to go into action and a great credit to the RAN, which had only established its own Fleet Air Arm in 1948. Her squadrons were equipped with the same type of aircraft as her British sister ships, and, indeed, many replacement aircraft came from British Far East reserve stocks, lent to the RAN while HMAS *Sydney* was in the war zone. Aircraft maintained the coastal blockade and kept a watchful eye on the building up of Chinese troops by rail and road. During October HMAS *Sydney* had to move away from the war zone to avoid Typhoon Ruth. She still encountered storm-force seas, which destroyed six aircraft in the deck park.



HMAS Sydney in Typhoon Ruth

In four months of operations, while HMS *Glory* was away refitting in Australia, HMAS *Sydney*'s 21st CAG flew 2,366 sorties in 43 operational flying days. Casualties included three pilots killed and 15 aircraft lost. She was relieved, in turn, by HMS *Glory*, who "fell back into the routine as if she had never been away" in January 1952. Flying operations now included the defence of islands off the west

coast occupied by allied forces as well as interdiction, spotting for shore bombardment, blockade enforcement, and close support of the Commonwealth Division. By the end of her second deployment in the war zone, HMS *Glory* had completed nearly 5,000 operational sorties for the loss of nine aircrew and 27 aircraft. Her Sea Furies, armed with two 500-pound bombs, had become deadly accurate dive-bombers using a 45-degree dive technique.

For the remainder of the war, HMS *Glory* alternated in the operational area with yet another light fleet carrier, HMS *Ocean* (R68). By the summer of 1952, the first Communist jet—the MiG-15—engined with a copy of the Rolls-Royce Nene, appeared. They had a considerable edge in performance over the Sea Fury, but fortunately their pilots did not. Sea Fury sections stayed together, kept their eyes peeled, used the available cloud cover, and survived. Some pilots did more than that. A World War II veteran pilot, Lt Peter Carmichael, always known as "Hoagy," and his flight from 802 Naval Air Squadron, embarked on HMS *Ocean*, shot down a MiG-15 on 9 August 1952. They "inconvenienced" several others.

Looking back on the war, Carmichael recalled that oxcarts were one of the main road targets to go for. It was amazing how many of them blew up when you hit them with cannon fire! This was a manifestation of the allied policy of interdiction in which both heavy bombers of the USAF and the bomb- and rocket-armed carrier fighter-bombers attempted to halt enemy troop and supply movement. It was not entirely successful, and the Communist armies were able to launch a large-scale offensive in the spring of 1953, as the possibility of a truce became stronger in the hope of making it appear as if the UN was suing for peace in order to avoid defeat. During this final period, Sea Furies and Fireflies covered large areas of country and attacked anything that moved and much that did not. For a time, three night-fighter Fireflies were put ashore at the request of the US Fifth Air Force to counter night-nuisance raids by Communist propeller-driven aircraft.

They operated with success from an airstrip south of Seoul.

At last, on 27 July 1953, an armistice was signed at Panmunjom. For some months after the war, light fleet carriers continued to operate close to Korea in case there was a resumption of hostilities. They included a tour by HMS *Warrior*, returned to operational duties after her time as a ferry carrier, and HMAS *Sydney*, which left Korea for the last time in June 1954.

The Commonwealth carrier that saw most action in the Korean War was HMS *Glory*. Table 1 shows examples of the type of sorties flown. She had equalled a record of 123 sorties in a single day set by HMS *Ocean*, a feat which involved every pilot, including Commander "Air" flying four sorties, which resulted in the destruction of seven bridges, 28 buildings, and five oxcarts. After leaving the United Kingdom in May 1951, she steamed 157,000 miles and flew 13,700 sorties, of which 9,500 were operational. Her aircraft destroyed 70 bridges, 392 vehicles, and 49 railway trucks for the loss of 20 aircrewmen. Weapon expenditure for this ship alone totalled 278 1,000 lb bombs; 7,080 500 lb bombs; 24,328

three-inch rocket projectiles; and 1,441,000 rounds of 20 mm cannon ammunition.

People

Individual accounts of war operations are beyond the scope of this article, but I have selected two as being illustrative of the Commonwealth carrier operations. Sub Lt Neil MacMillan and CPO Philip Hancox of the RAN were shot down in the Firefly near Sariwon north of Haeju. HMAS *Sydney* had Sea Furies in the air, and they were sent to provide cover, as the downed aircraft was well inside enemy territory. The carrier captain found it difficult to make the decision to send the SAR helicopter, loaned by the USN with a USN crew, for them because it was doubtful if they could fly the 75 miles and clear enemy territory before nightfall. He approved the sortie, and the helicopter set off. Meanwhile Meteor fighters of 77 Squadron RAAF joined the Sea Furies, and the downed aircrew helped to keep the encircling enemy troops at bay with their Owen submachine-gun. At 1715 the Meteors had to go, but the Sea Furies, flown by Lieutenants Cavanagh and Salthouse, decided to stay despite being low on fuel. At 1725 the helicopter arrived and landed, having flown at 120 knots—some 20 knots above the accepted legal maximum. Its observer, CPO Callis Gooding, jumped out and shot two enemy soldiers who crept within 15 yards of the downed aircraft. An hour later, the helicopter, with the two rescued aircrew and still escorted by the Sea Furies, landed at Kimpo Airfield just as darkness fell.

During a patrol by HMS *Glory* in January 1953, a different form of interdiction was tried. With the rivers and ground both frozen hard, road transport could easily drive around any damage inflicted. It was well known that railway bridges were always quickly repaired, and so attacks were directed at railway lines at inaccessible parts of the routes. A total of 33 cuts were made, and, at first, repair activity was slow. On 5 January a Sea Fury piloted by Lt D. G. "Pug" Mather was hit by enemy flak after an attack on a railway line north of

Table 1. Examples of sorties flown from HMS *Glory*

June 1951	Sea Furies flew close air support over the allied lines. Fireflies used 1,000 lb bombs against bridges, and both types spotted for bombardments by frigates.
July 1951	Attacks concentrated on railway trucks, junks, and barracks. Several "moving haystacks" caught fire after being hit.
Sept. 1951	Set a new record of 66 offensive and 18 defensive sorties in a day with 100 percent serviceability.
Feb. 1952	Operated in defence of allied-held islands including Cho-do and Paengnyong-do.
Mar. 1952	Lieutenant Fraser's Sea Fury suffered an engine failure "slotting" to starboard of the carrier, and he ditched. He was immediately rescued by the USN plane guard helicopter, which had him on deck in 1.5 minutes, quicker than he would have been there in his own aircraft!
Mar. 1953	Equalled the record of 123 sorties in a single day set by <i>Ocean</i> .



Rescue behind enemy lines

Chaeryong. It caught fire, and he baled out, but his section failed to see where he landed. For 90 minutes aircraft searched for him without success, and a USAF helicopter, escorted by two Sea Furies, was sent to the scene. Unfortunately, bad weather forced it to turn back, and Lieutenant Mather was taken prisoner by the NKPA. One of the escorting Sea Furies, flown by Sub Lt B. E. Rayner, lost radio contact and was never seen again. Later in the day, a Sea Fury flown by Sub Lt B. J. Simonds, Royal Navy Volunteer Reserve, spun from 3,000 feet and exploded on hitting the ground. Lieutenant Foster made a wheels-up landing at Paengnyong-do due to a rough-running engine and electrical failure in his Sea Fury. On the next day, a Firefly, flown by Lt W. R. Heaton, was hit by flak and ditched north of Kirin-do. He was rescued from his dinghy by a USAF helicopter from Paengnyong-do.

Some Lessons Learned

Photography was used extensively, being particularly useful for harbour reconnaissance in the enforcement of the blockade and for assessing the results of interdiction missions. In mid-1952 a photographic-interpretation officer was appointed to the operational carrier. His services were described as invaluable, and the hundreds of images, when expertly interpreted, revealed many ingeniously camouflaged targets.

The value of the helicopter as a combat SAR vehicle was amply demonstrated on land and at sea. As a "plane guard" during flying operations, it was unrivalled for efficiency by day, but a destroyer operating close to the carrier was still necessary at night. At different times, RN aircrewmen were rescued by helicopters operating from bombarding cruisers at Wonsan and Inchon, from the landing-ship-tank minesweeping tender, from USAF airfields, as well as their own carriers. Their morale value was important, but their limitations had to be appreciated. These included a small radius of action, made even smaller by strong headwinds and a reliance on dead-reckoning navigation with its potentially large errors. Instrument-flying capability was minimal, and the range of their very-high-frequency radios was limited. For these reasons the ubiquity of basing was an important factor, and some of the aircrew that were rescued would not have been recovered if only the carrier-borne helicopters had been available.

HMS *Ocean* instituted pre-dawn missions, and these proved very productive of targets as the aircraft found enemy road transport that was still on the move. Many lorries were destroyed in this way, and the experience gained by aircrew from this type of operation was of great value. The enemy was not slow to react, however, and HMS *Glory*'s aircraft soon had difficulty finding targets after the enemy introduced a simple but effective air-raid warning system. This comprised warning fires, lit on the ground, which appeared from two to three miles ahead of the aircraft—on looking back, pilots could see a long line of fires stretching behind them! A low approach was then adopted to deceive the enemy radar, but the foggy season intervened before the effectiveness of this method could be fully gauged.

In general, pilots had not been trained in night deck-landing techniques, and so night interdiction was not possible throughout the war.

Command and Control

It was clear from the outset that the United States would bear the heaviest share of the

fighting, and since there was an existing US command structure in Japan, it was natural that the naval contributions from the Commonwealth navies should fit into it. Operational command was the most significant since the British Far East Fleet had its own logistic-and type-support structure. This was able to support the Australian, Canadian, and New Zealand units since they all operated ships and equipment of British manufacture. Personal relations between American and British officers were, throughout the war, effective and cordial. Misunderstandings and differences of outlook were inevitable but were always overcome. Many arose simply because of the difficulty of arranging verbal contact with the American operational commanders, most of whom exercised their commands afloat. In contrast, the three British admirals who acted as FO2FEF during the war exercised their command from Sasebo in Japan, only proceeding to the operational area with a small staff on special occasions.

The chief difference between the American and British systems lay in the rigidity of the former. Orders were extremely detailed, and direct communication on a junior level with another service or even task force was frowned upon. All communication was supposed to go back up the chain of command, through the top, and down again. Information addressees did not take action until told to comply by the immediately superior authority, even when it was obvious that such action would have to be taken. Practically no discretion was left to the "man on the spot." In the British Commonwealth command structure, anticipation and initiative were expected and exercised. USN ships attached to the West Coast Blockade Group very much appreciated the reduced reliance on signals, instructions, and demands for situation reports. Later relations between the USN and RN benefited greatly from the perceptions of mutual confidence that grew from these operations.

Another difference was a rule in the USN that the officer in tactical command of a carrier task force or group must be an aviator. It accepted that less-efficient anti-aircraft and anti-

submarine screening and co-ordination between forces might result, and the RN view was that non-flying factors might suffer in consequence. The fact that none of the British flag officers were aviators made it difficult for the commander 7th Fleet to understand how they could command a task group that contained two light fleet carriers. At one stage it was suggested that they should be taken out of Task Force 95 and, though continuing to operate in the same area in the Yellow Sea, placed under the command of Task Force 77, the heavy carriers, which usually operated in the Sea of Japan. The British vetoed this.

Communications

The rigidity of the US system of command threw a heavy strain on communications. Operation orders and plans reached prodigious dimensions and contained so much detail that, from a British perspective, "some of the wood could not be seen for the trees." Time was wasted while orders were passed down the long chains of command, and "Americanisms" such as *ready for sea* initially caused confusion. On the whole, Commonwealth warships had little difficulty in using the US system but had to augment the equipment and manning levels in order to cope with the increased signal traffic.

The strain on communications was amplified by the large number of situation reports, reports of intentions, action taken, and so on required from ships at sea by US commanders. Great importance was placed on operational summaries, known in the USN as "opsums," intended for the benefit of the press. This was something new to the British at the time, although it was to become familiar to a later generation during the Falklands War.

British Perception of the Interdiction Campaign

Complete interdiction of a battlefield has always proved difficult, but circumstances in Korea seemed to offer special opportunities. The complete blockade enforced by the over-

whelming UN naval forces entirely ruled out supply by sea; the meagre rail and primitive road communications of North Korea seemed vulnerable to the almost undisputed UN air power. Additionally, important road and rail centres on the east coast were open to naval bombardment. The vulnerability of the railways seemed to be enhanced by the large number of bridges and tunnels forced on them by the mountainous terrain of North Korea. For example, the eastern network, the scene of most naval interdiction effort, included 956 bridges and causeways and 231 tunnels in 1,140 miles of track.

After the limitation of the Chinese offensive, the main effort of UN air operations was directed at interdiction. This was the primary responsibility of the US Fifth Air Force, supported by allied contingents and all available naval and USMC aircraft. The efforts of the USAF and USN were never co-ordinated at theatre level, one result from the lack of a unified joint command. Gradually, it came to be accepted that, broadly speaking, the USN would deal with the east coast railway and highway systems, and the USAF dealt with the west coast where it interacted with the Commonwealth carrier efforts. Except when circumstances dictated other temporary employment of aircraft, this policy continued for 20 months. Immense damage was unquestionably inflicted on the enemy communications systems, and all movement by rail or road was confined to the hours of darkness, but full interdiction of the battlefield was never achieved. Throughout the campaign, the Communists were always able to launch an offensive if they wished to do so.

The causes of this failure, in British eyes, were primarily due to inhibitions accepted by the UN for political reasons and partly to tactical and operational conditions. In the former category the ban on sources of supply in Manchuria robbed aircraft of targets which might well have been decisive. The static war, accepted during the protracted armistice negotiations, enabled the Communists to keep their strongly fortified front lines sufficiently supplied in a way they could never

have done in a war of movement. The enemy was allowed to fight on his own terms, and many of the advantages possessed by the allies were negated.

When it was initiated in January 1951, the interdiction campaign had the object of impeding the Communist advance and was undoubtedly justified, although opposed by Adm Arthur D. Struble, USN, CTF 77, who felt that his aircraft would be better employed providing close air support for the Army. Its continuation throughout the long armistice negotiations savoured dangerously of trying to win the war by air power alone, while the Army and Navy were relegated to comparatively static and defensive roles. It is difficult to resist the conclusion that this strategy, which certainly suited the Communists, was continued for too long and that better results would have been obtained by the adoption of a more aggressive strategy implemented by the three services working together in the closest co-operation in support of each other. With hindsight, the exertion of the mobility and flexibility given to the UN forces by their command of the sea and the air should have been used to force a war of movement that the enemy could not have sustained. This might well have compelled the enemy to accept more satisfactory armistice conditions at an appreciably earlier date.

Summary and Comment

At the outset, Admiral Andrewes had stated that it would be wrong to regard a single light fleet carrier as representative of what naval aviation could achieve in any theatre. Even taking into account the conditions under which the war was fought, the endless coastline around a narrow peninsula, and the lack of naval and air opposition, the performance of the Commonwealth carriers was, however, remarkable. The intensity of flying, the operational lessons, and the length of the war, throughout which the Commonwealth maintained a carrier on station, brought many squadrons and their people to a high pitch of professionalism and efficiency matched in

few other arms of the British services. In turn, this produced a corps of experienced aircrew and maintainers who were well equipped to handle the new generation of aircraft, such as the Buccaneer, and to use the new equipment and techniques that were being developed in the United Kingdom that would revolutionise carrier aviation.

The light fleet carriers provided the most conspicuous aspect of Commonwealth operations in the Korean War. Their performance was admitted on all sides to be outstanding but was possible only because of the lack of serious naval and air opposition. Had these existed on an appreciable scale, more ships would have been needed, and more effort would have been required for fighter defence and escort to the detriment of offensive operations. The results achieved were the result of hard work, much improvisation, and the driving of machinery, in some cases, beyond the limits for which it was designed.

The signing of an armistice on 27 July 1953 ended hostilities that had lasted 1,128 days and had involved naval forces from Australia, Canada, Colombia, France, the Netherlands, New Zealand, the Republic of Korea, Thailand, the United Kingdom, and the United States.

The seal of Royal approval was set on the Commonwealth effort two days after the armistice was signed when the following message from Her Majesty the Queen to the Board of Admiralty was signalled to the Fleet:

Please express to all serving in the Commonwealth Fleet my deep appreciation of the splendid service they have given throughout the fighting in Korea.

(Signed) ELIZABETH R

Statistics

During the war, 76 ships of the Commonwealth navies and their fleet auxiliary services served in the combat area for varying periods. The 32 warships of the Royal Navy included five carriers, six cruisers, seven destroyers, and 14 frigates. The nine warships of the Royal Australian Navy included one carrier, four destroyers, and four frigates. The RAN suffered a total of 191 casualties.

A combined 17,000 officers and men of the Royal Navy, Royal Marines, and Royal Fleet Auxiliary Service served afloat in Korean waters, and 4,300 more served ashore in Japan. Of this number, 165 officers and men were decorated for gallantry, and 289 were mentioned in despatches. British warships steamed 2,100,550 miles and used 632,150 tons of fuel. Carrier aircraft dropped 15,200 bombs of various sizes and fired 57,600 rockets and 3,300,000 rounds of 20 mm cannon ammunition in 23,000 operational sorties.

A total of 4,507 officers and men of the RAN served afloat in the war zone. Of this number, 57 officers and men were decorated for gallantry. Australian warships steamed over 419,000 miles, and carrier aircraft dropped 802 bombs of various sizes, firing 6,359 rockets and 269,249 rounds of 20 mm cannon ammunition in 2,366 sorties. □

Notes

1. UN, *Security Council Resolution 83*, Document S/1511, 27 June 1950.

2. US Navy, *Korean War: Chronology of U.S. Pacific Fleet Operations, June–December 1950* (Washington, D.C.: Naval Historical Center, 28 June 1950), <http://www.history.navy.mil/wars/korea/chron50.htm>.



Doctrine NOTAM

Joint Publication 3-16, *Joint Doctrine for Multinational Operations*

"If You Work with Friends, Bring It Along!"

LT COL MALCOLM D. GRIMES, USAF
MAJ DONALD R. FERGUSON, USAF

U S FORCES FIGHTING in the peace-making and peacekeeping operations of the twentieth and twenty-first centuries have done so alongside the forces of allied and coalition countries. In fact, most recent American military operations have involved an ally or coalition partner. Some prominent examples include World Wars I and II; the Vietnam War; and Operations Desert Storm, Allied Force, Enduring Freedom, and Iraqi Freedom. The current version of Joint Publication (JP) 3-16, *Joint Doctrine for Multinational Operations*, 5 April 2000—based on our corporate knowledge, experience, and lessons learned—provides the doctrine our commanders use as a starting point to plan and execute current and future combined operations. One of the keystone-level or above-the-line publications, JP 3-16 is intended for use by combatant, subunified, and joint task force commanders; service chiefs; and Joint Staff directors. As part of the third tier of the operational series in the joint-publication hierarchy, it delineates interfaces with allies and serves as a launching point into multinational operations. Its 106 pages include four chapters that provide joint doctrine for participation in multinational operations, describing our best current (and partially futuristic) ideas on the art of war. Airmen should quickly recognize the similarity between their own Air Force doctrine and its description of multinational air operations:

Air operations gain and maintain control of the air and exploit its use to achieve the [multi-

national force commander's] objectives. *Unity of effort* is necessary for effectiveness and efficiency. *Centralized planning* is essential for controlling and coordinating the efforts of all available forces. *Decentralized execution* is essential to generate the tempo of operations required and to cope with the uncertainty, disorder, and fluidity of combat. (ix, italics added)

A nation involving itself in a coalition (an ad hoc arrangement between two or more nations for common action) or an alliance (a formal agreement between two or more nations for broad, long-term objectives) must adhere to certain fundamentals, a commitment that requires close coordination with the other member nations to ensure that they operate in the most efficient manner. Conducting multinational operations at the highest levels of efficiency requires that the different nations fully use their strengths but minimize their weaknesses. Through coordination, they can attain this high level of performance across the spectrum of multinational operations, from all-out war to operations short of war.

Organizations comprised of different elements, such as coalitions and alliances, must have a command structure that takes into account differences in doctrine, types of equipment, training philosophies, and customs. It is vital, therefore, to establish a liaison to lessen the confusion associated with these differences. Commanders at all levels in the multinational force must be sensitive to such variations in order to command effectively; they must also be

knowledgeable of the overall mission of the coalition or alliance, its associated risks, and the rules of engagement (ROE). Other critical concerns of the commander include operational control, foreign operational control, tactical control, support, and the chain of command.

Published 17 months before the terrorist attacks of 11 September 2001, JP 3-16 proved useful to US commanders when their forces joined with militaries of several countries to plan, coordinate, and execute operations on various targets in response to those strikes. The multinational commanders of combined operations take political, military, and economic factors into consideration when conducting their mission analysis and assigning tasks. The many other factors they need to assess include intelligence and information gathering, host-nation support, and language and cultural barriers that could easily confuse the overall planning. When drafting the ROEs, they also must consider the impact of international law and the laws of armed conflict. In conflicts involving coalitions and alliances, such as Iraqi Freedom, each nation must enforce the discipline of its own forces to adhere to the ROEs because, particularly in these conflicts, the entire world watches and takes note if those forces fail to act in a certain proper and prescribed way.

No current plans exist to update JP 3-16. However, an associated document—JP 4-08, *Joint Doctrine for Logistic Support of Multinational Operations*—appeared on 25 September 2002. That document and, when appropriate, other NATO publications provide logistic guidance to multinational commanders and their staffs. Nevertheless, like a multinational coalition or alliance, multinational doctrine is very situational in nature. For that reason, beyond the broad overview and structure shown in JP 3-16, hard-and-fast doctrine can prove problematic to develop, awkward to use, and difficult to maintain as the world situation changes.

With respect to this special edition of *Air and Space Power Journal* and *RAF Air Power Review*, JP 3-16, appendix B, makes reference to several

specific examples of multinational operations involving both countries:

- In the early 1900s, British and American forces fought together in the Boxer Rebellion, World War I, and in the Bolshevik Revolution.
- During World War II, US forces found themselves working closely with the British, both in a commanding role and in a subordinate position to British commanders. That coalition was decisive in defeating the Axis powers, thus reinforcing the United States' continuing desire for a coalition approach to warfare.
- During Desert Storm, an air commander for the British forces and a US Air Force commander (US Central Command Air Forces) were heavily involved in planning air activity at the operational level.

Both the United States and the United Kingdom are extremely active in standardization with other allies and friendly nations, in order to achieve the highest cooperation among their militaries. They are also working towards the most efficient levels of research and development of resources to help nations get the most out of their militaries. Both countries are members of NATO's standardization forums; the five-nation Air Standardization Coordinating Committee; and the American, British, Canadian, Australian Armies Standardization Program.

The bottom line is that JP 3-16 contains a wealth of information for our commanders about how US forces should interface with allied and coalition forces. Although written for more senior commanders, it can be adapted and used effectively by leaders at lower levels to guide operational- and tactical-level interactions and operations. By using JP 3-16 judiciously, we can anticipate the enemy's plan and beat him at his own game. We can keep peace in the world and help persuade rogue nations to change their modus operandi, as well as their worldview.

To Learn More . . .

Joint Publication 3-16. *Joint Doctrine for Multinational Operations*, 5 April 2000.

Joint Publication 4-08. *Joint Doctrine for Logistic Support of Multinational Operations*, 25 September 2002.

Post–Cold War Development of United Kingdom Joint Air Command and Control Capability

WING CDR REDVERS T. N. THOMPSON, RAF

Editorial Abstract: The United Kingdom received a “wake-up call” from Operation Desert Storm when that country’s unpreparedness for “expeditionary” and indeed joint warfighting was highlighted. The mid-1990s brought extensive consequential changes to the United Kingdom’s joint operational command structures, including the organizational development of its air command and control capabilities that encompassed the eventual formation of the UK Joint Force Air Component Headquarters.



Coming out of the Cold War

In the mid-1980s, the focus of both the Royal Air Force (RAF) and the rest of the United Kingdom's (UK) military forces was, as it had been for nearly four decades, almost exclusively on their respective contributions to the defence of NATO's Central Region and the UK mainland. The RAF's aircraft were primarily located and operated from main operating bases (MOB), with many permanently deployed in Germany where they were expected to train and fight. These MOBs were collocated with both their required support infrastructure and well-defined national and NATO command and control (C2) organizations. Then in the late 1980s the political/military status quo changed at an amazing pace. In 1987 US president Ronald Reagan and USSR president

Mikhail Gorbachev met in Washington to sign a nuclear weapons treaty. In December 1988 President Gorbachev gave more freedom to the states of Eastern Europe, and a month later he withdrew the Soviet military from Afghanistan. By the end of 1988 President Gorbachev renounced the use of force in Czechoslovakia, Bulgaria, and Rumania, whose communist regimes had fallen. Then on 9 November 1989 the world watched in amazement as Germans tore down the Berlin Wall. In May 1990, Presidents Bush and Gorbachev met in Washington and signed treaties that called for a reduction of nuclear weapons and a ban on chemical weapons. Later that year, President Gorbachev met with German chancellor Helmut Kohl, signed a nonaggression pact, and initiated the withdrawal of Soviet troops from Eastern Germany.

However, through this period of fundamental and rapid change in the grand and military-strategic realpolitik, little if anything changed in the United Kingdom's military focus.¹ As the RAF entered the 1990s, while remaining honed to an extremely fine edge at the tactical level of war, at the operational level of war it was still psychologically wedded to a Central Region "bunker mentality" embodied in the fixed operational-level NATO C2 organization; fixed NATO infrastructure and logistic support; fixed MOBs, with their hundreds of hardened aircraft shelters proofed against nuclear, biological, and chemical attack; and fixed "play-book" of war plans. With a Royal Navy focused largely on the Soviet submarine threat, a British Army focused on its defensively orientated "heavy-metal" armoured divisions, and an RAF dependent on fixed infrastructure and, most pertinent to this article, fixed operational-level NATO C2, it is likely that it was only with Iraq's invasion of Kuwait on 2 August 1990 and the United Kingdom's subsequent deployment for and execution of the coalition operations of Desert Shield and Desert Storm (United Kingdom's Operation [Op] Granby), did the full realization hit the UK political/military establishment that its extant Cold War posture was in need of change.

Operation Desert Storm—The Dawn of Realization

And so it was that at some time during or shortly after Desert Storm did the term *expeditionary* suddenly drop into the lexicon of the RAF. The author of this article can vouch that as part of an operational, front-line aircrew the only time the term *expeditionary* was used was in the context of a week's walking excursion to the Scottish Highlands! However, as a result of the Gulf War and its associated US after-action reports and UK lessons-learnt processes, and the subsequent doctrinal stocktaking, UK attention was drawn to some significant problem areas related to the RAF's ability to execute air C2 on a national, expeditionary basis. Firstly, it came into stark focus

that the RAF was dependent on an operational-level legacy system of fixed C2 and infrastructure that had very limited adaptability, and therefore in fact possessed no effective deployable air C2 capability whatsoever. Equally, there was an equivalent lack of C2 capability possessed by the other UK services, and as no UK environment had any national, operational-level C2 capability worthy of note, it is not surprising that there was no effective doctrine or procedures for operational-level coordination between them. Indeed, the other word that was not widely prevalent in the UK operational lexicon at this time was *joint*. While following the lessons of the Falklands War, a Joint Force Operations staff was established, and the doctrine for a Joint Headquarters (JHQ) and Joint Force HQ (JFHQ) was developed. There was little in the way of single-service doctrine regarding the operational-level planning and integration of air/land/maritime operations. It also became clear that nationally little was provided by the way of operational-level C2 training; this was especially true in the case of air C2 training, where there was no effective operational training at all for air commanders or their battlestaff. Understandably, as the RAF had little need to undertake operational-level planning or C2 outside of a NATO context, it had largely abrogated the responsibility for the training and provision of operational-level air C2 expertise to NATO. The result was that at the time of Op Granby, the RAF had little or no air C2 expertise, and not surprisingly therefore the UK air input to the US-led air planning and C2 process was marginal. In 1992, taking account of some of the air C2 lessons from Op Granby, the Department of Air Warfare at the RAF College Cranwell revamped the Air Battle Management Course (ABMC) and instituted the "estimate" process as a formal air campaign planning process both in the course and in the new Air Operations Manual (AOM). However, without an identifiable Air HQ, neither the ABMC nor the AOM could be targeted at any specific audience.²

Preparing for United Kingdom Deployed Joint Operations

In January 1994 the UK government drove a Ministry of Defence (MoD) Defence Costs Study (DCS) that inter alia identified a number of shortcomings with the C2 of UK military operations overseas. As one result, on 1 April 1996, a Permanent Joint Headquarters (PJHQ) for joint military operations was established at Northwood, in northwest London. This HQ brought together on a permanent basis intelligence, planning, operations, and logistics staffs. The establishment of PJHQ was intended to provide a truly joint force HQ that would remedy the problems of disruption, duplication, and the somewhat ad hoc way in which previous recent operations had been organized. MoD officials described the primary role of PJHQ as

working proactively to anticipate crises and monitoring developments in areas of interest to the UK. The establishment of PJHQ has set in place a proper, clear and unambiguous connection between policy and the strategic direction and conduct of operations. Because it exists on a permanent basis rather than being established for a particular operation, PJHQ is involved from the very start of planning for a possible operation. It will then take responsibility for the subsequent execution of those plans if necessary.³

Commanded by the chief of joint operations (CJO), the PJHQ's primary role is to be responsible, when directed by the UK chief of Defence Staff (CDS), for the planning and execution of UK-led joint, potentially joint, combined, and multinational operations. CJO is also responsible for exercising operational command of UK forces assigned to combined and multinational operations led by others. Commanding at the operational level, PJHQ is responsible for directing, deploying, sustaining, and recovering forces on operations. It was envisioned that the forces employed would be drawn from a Joint Rapid Deployment Force (JRDF) that would become operational on 1 August 1996 and would be designed to be able to fulfill a wide range of

combat or non-combat missions, mounted nationally or as part of any contribution to operations mounted by NATO, the European Union, or the United Nations. While it was stated that the JRDF-earmarked units would "conduct extensive training on a regular basis, thereby increasing their ability to come together quickly and operate together as an effective and cohesive package at short notice," there was no explicit detailing of any facilitating, deployable in-theatre C2 capability.⁴

United Kingdom Combined Air Operations Centre—The First Air Command and Control Steps

Despite the realizations highlighted above and the fact that the RAF had been engaged constantly after the Gulf War in support of the air operations Warden and Jural over northern and southern Iraq, respectively, few practical forward steps were made in terms of air C2 by the RAF over this four-to-five-year period that followed Op Granby. The catalyst that finally promoted action in the air C2 arena was the tragic events of 14 April 1994, when two US Black Hawk helicopters with 26 personnel on board and operating in support of Op Provide Comfort were engaged and destroyed by two USAF F-15Cs operating from Incirlik AB, Turkey, on Op Warden. In the aftermath of the analysis of this "blue-on-blue" incident, that overlaid in time the work already ongoing as a result of the United Kingdom's DCS mentioned above, and ongoing operations in the Balkans (e.g., Op Deliberate Force), it was realized by the UK chiefs of staff (COS) that if the United Kingdom were to try to mount a national-only deployed operation similar to any of those currently ongoing, it would need to significantly develop the United Kingdom's own operational-level deployable C2 capability. As a result, inter alia, the UK COS directed that the United Kingdom should "adopt the US JFACC [joint force air component commander] concept," as the underpinning doctrine for national C2 of deployed operations.⁵

The RAF took this COS direction forward, and in 1995 the RAF's Air Force Board Standing Committee endorsed a paper entitled "Command and Control of STC [Strike Command] Assets" that reviewed the UK structure for air C2 and recommended the permanent establishment in peacetime of a UK combined air operations centre (CAOC). By April 1997 this new air C2 organization had been implemented in full alongside the RAF's STC peacetime HQ at RAF High Wycombe. It subsumed the NATO defensive operations capability that had existed at Sector Operations Centre (SOC) United Kingdom, at nearby RAF Bentley Priory, and became responsible for the vigil over UK national and NATO airspace and the monitoring and control of the UK Air Surveillance and Air Control System (ASACS). In addition to the very real-world SOC responsibilities, the UK CAOC went on to achieve a capability to plan, task, and control offensive, defensive, and combat support air operations. Surprisingly, however, given the genesis of the decision to form it, the UK CAOC was not initially tasked with, nor equipped for, the conduct of C2 of deployed operations. Notwithstanding a lack of higher HQ guidance, an in-house UK CAOC initiative developed an interim deployable capability that was in place by late 1997, although this was limited to an ability to host the "initial CAOC capability" air battle-management system (ABMS) (NATO's equivalent to the Contingency Theatre Automated Planning System/Theater Battle Management Core System) on a limited number of deployable laptops.

Strategic Defence Review Pushes Forward "Deployability" and "Jointery"

In July 1998, the UK government announced its Strategic Defence Review (SDR), which it labeled as "a radical review of the UK's defence requirements, with the aim of modernizing and reshaping the UK's Armed Forces to meet the challenges of the 21st Century."⁶ The two central pillars that were to

emerge were moves towards more rapidly deployable armed forces and "jointery." The SDR identified that, in addition to maintaining extant standing commitments, the United Kingdom should also be able to do the following:

1. Respond to a major international crisis. This might require a military effort of a similar scale and duration to the Gulf War.
2. Undertake a more extended overseas deployment on a lesser scale while retaining the ability to mount a second substantial deployment if this were made necessary by a second crisis. We would not, however, expect both deployments to involve WF [warfighting] or to maintain them simultaneously for longer than six months.
3. Rebuild, given much longer notice, a bigger force as part of NATO's collective.⁷

SDR also identified that, other than under a warfighting (i.e., significant military) threat to the United Kingdom, the RAF would almost certainly deploy overseas and operate from host-nation airfields or ships in support of national, allied, or coalition operations under a range of possible C2 arrangements; this observation manifested itself in the drawdown of RAF squadrons in Germany and reconstitution on the UK mainland.

SDR addressed the fact that NATO was responding to the evolution from static to expeditionary warfare by establishing Reaction Forces with the capability of countering possible short-notice threats to its flanks, and stated that the United Kingdom had developed its own Joint Rapid Reaction Forces (JRRF)—a pool of highly capable units from all services that is maintained at high readiness for contingency operations. The establishment of the JRRF was probably the most important joint initiative in the SDR and is still central to current UK defence planning. PJHQ's CJO became responsible for the JRRF, although until deployed, operational command (OPCOM) of units is retained by the single-service commanders in chief (CinC).

Units within the JRRF are trained to joint standards and would be deployed in joint force packages, tailored to meet the operational requirement. To command the JRRF in-theatre, a fully resourced JFHQ was established at Northwood, under PJHQ's command, and is permanently held at 48 hours' notice to move.

Deployable Air Command and Control—The Need Is Established

To reflect the earlier introduction of the JRDF, AOCinC STC had previously, on 1 April 1998, tasked UK CAOC to provide, at 48 hours' notice (R1), the core air C2 element of a deployable Joint Force Air Component Headquarters (JFACHQ) for JRDF operations. However, this significantly enhanced tasking was not matched at the time with any provision of additional personnel, computer information systems (CIS), infrastructure, training resources, or budget. Notwithstanding the lack of facilitating resources, a new concept of operations (CONOPS) was developed for the UK CAOC and issued in September 1998. In parallel, the development of a CONOPS for this "deployable JFACHQ" began and achieved a one-star circulation by March 1999; this was the genesis of the UK's JFACHQ.

The initial development of this new JFACHQ CONOPS, undertaken by its STC project officer (ProjO) in early 1999, was driven by the SDR that had redefined the RAF's operational C2 responsibilities, requirements, and structures and introduced the JRRF.⁸ A significant consequence of which was that STC was now required to "be able to deploy, at very short notice, responsive, coherent Composite Air Expeditionary Forces, commanded centrally at the tactical level through a JFACC."⁹ SDR had also identified the need to mount, on a unilateral basis, two concurrent medium-scale operations, one warfighting and one non-warfighting. Moreover, it also stated that the United Kingdom was to be able to assume a leadership role in coalition operations with other European forces. SDR therefore drove a requirement

"to be able to deploy one fully manned JFACHQ while identifying the core elements of a second HQ," with the additional "implied" task that the envisioned JFACHQ had to be able to act as a Combined Force Air Component HQ (CFACHQ).¹⁰ While the above defined well the task, the resources for meeting that task were being addressed as part of the RAF's *STC Structure Beyond 2000 Study*.¹¹ It became obvious to the JFACHQ ProjO that there was an organizational "dislocation of expectation" when he discovered that this study assumed that no additional resources were to be made available and had scoped the manning level for the R1 core JFACHQ cadre at just 28 personnel, the number having been derived from the anticipated provision of a group captain (O-6) director, an executive officer, and just a core combat plans and combat ops—that is, a skeletal air operations centre (AOC). With echoes of the earlier lack of resourcing of the expanded UK CAOC task, the ProjO was given to recall a US saying: "Vision without funding is hallucination."

The author believes that it was fortuitous timing (if that can be said of any conflict) that at this point in the RAF's restructuring, the Balkans erupted once more, in the guise of Kosovo, with the resulting execution of Op Allied Force. Without addressing the extensive number of lessons that fell from this operation, it is sufficient to state that many were related to the C2 of this primarily air operation, and many lessons were carry-overs from Desert Storm some nine years earlier. In the context of this article, principal among these was that the assumption that a medium-scale air operation could be executed just by the elements of an AOC (i.e., combat plans and combat ops) was proven to be erroneous. While undertaken with the best military endeavour by all those personnel involved, the consequential expansion of the Vicenza AOC into an operational-level JFACHQ was a case study in ad hoc crisis management. Only after the belated formation of a strategy division was a form of a joint air operations plan (JAOP) developed and signed off by the CFACC on the 40th day of air operations along with

the first air operations directive. Similarly, it was to be another five to 10 days before a guidance, apportionment, and targeting process was established. Across the whole range of HQ staff cells (A1–A9), augmentors were being thrown in together, often without cadre personnel or identified procedures to follow.

As a result of his experiences at Vicenza, the JFACHQ ProjO argued that the SDR remit would only be met with the provision of a core JFACHQ and not just a core AOC. The need for the “command” element of C2 of any JRRF air element was highlighted, along with the likely need, given the understandable political realities of delaying decisions to commit forces, of air C2 elements being able to “hit the ground running.” It was also identified that C2 augmentors require a core cadre framework of personnel around which to form and establish standard operating procedures (SOP) to reference. As well as identifying deficiencies, a positive highlight was identified as being that the RAF’s ability to provide even a limited number of experienced and trained personnel to the coalition AOC (from Air Warfare Centre, UK CAOC, and other RAF elements) had enabled a significant degree of influence to be exercised within the Allied Force air C2 processes. These “lessons” manifested themselves in a November 1999 paper on the proposed structure and establishment of the UK JFACHQ, which identified the following main lines to take:

1. UKJFACHQ is absolutely pivotal to STC provision of effective expeditionary air power capability.
2. Proposed structure and establishment provide expertise in all essential C2 areas but at skeletal or digital manning levels: any “thinning” will result in the loss of core expertise and capability.
3. National 82-man UK CAOC to be replaced by 66-man UKJFACHQ.
4. UK JFACHQ should be viewed as STC’s C2 “jewel in the crown”: requires same priority in manning as other front-line R1 operational units.¹²

In early December 1999, a final STC “justification” paper was submitted and approved.¹³ It stated that PJHQ had confirmed that it may be essential for the JFHQ to deploy with a complete JFACHQ and that the JFACHQ should mirror the JFHQ’s availability and readiness at R1. The paper supported both these lines, noting that with so many JRRF air assets at R1, there was a *prima facie* case for holding a C2 element at the same readiness. The paper went on to state that “the need for an efficient CAOC has also been reinforced by the Kosovo operation” and identified the need to have a “full range of expertise and staff functions A1–7 from the outset.”¹⁴ It also drew on common experience from Ops Desert Fox and Allied Force that the UK’s Defence Crisis Management Organization (UK equivalent of US Department of Defence and Joint Staffs) required significant reinforcement for the operational-level planning stages of an operation. The paper therefore recommended that it should be the JFACHQ A5 (strategy division) that supported this, thereby enabling the maintenance of continuity from operational-level planning to tactical-level execution.¹⁵ On 26 January 2000 STC’s policy for the introduction of the UK JFACHQ was issued, with the intention of forming the UKJFACHQ at RAF High Wycombe on 3 March 2000.¹⁶

United Kingdom Joint Force Air Component Headquarters: Air Command and Control Leads the Component Field

When the UK JFACHQ officially formed in March 2000, its mission spanned a wide range of tasks in peace, crisis, and war. Its *raison d’être* and primary tasks were identified within this still extant mission statement:



To provide a UK core JFACHQ for the command and control of expeditionary air operations, and to develop, and provide training in, the command and control of joint air operations in order to maximise UK’s operational air power capability.¹⁷

This mission was broken out into three substantive tasks:

1. To develop, exercise, and maintain, at RL, a deployable core JFACHQ for the C2 of national or coalition expeditionary air operations in order to maximise the United Kingdom's deployable joint air capability.
2. To develop and document the United Kingdom's operational joint air C2 processes, procedures, and CIS in order to maximise the United Kingdom's air power potential.
3. To sponsor, provide, co-ordinate, and standardise air C2 training in order to ensure the United Kingdom has sufficient fully trained JFACCs, core and augmentor air battlestaff, and joint component liaison personnel to meet the JRRF air C2 commitment.¹⁸

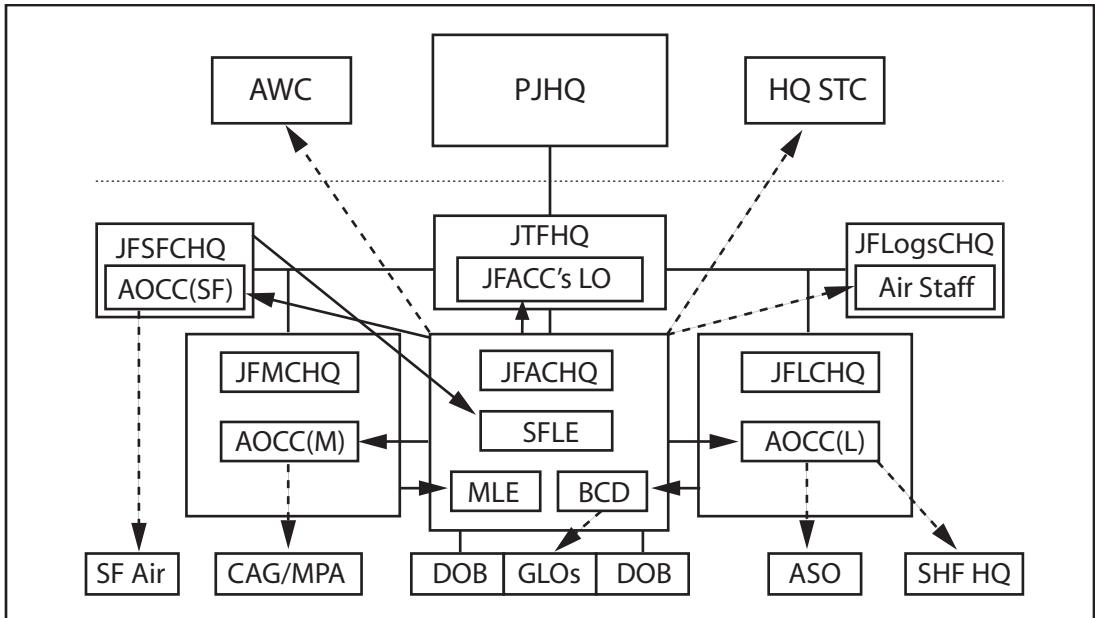
The UK national C2 CONOPS for the deployment of UK forces on joint national operations assumed the appointment of a joint commander (Jt Comd), who exercises OPCOM at the military strategic and operational levels, and a joint task force commander (JTFC), who normally exercises operational control (OPCON) over assigned forces throughout a theatre of operations. The JTFC is responsible for planning and executing the joint campaign and normally directs operations from a Joint Task Force Headquarters (JTFHQ) in-theatre.

Within the JTF, joint force component commanders would normally be appointed. These would include a JFACC, who is responsible to the JTFC for developing and executing the JAOP to best support the JTFC's overall campaign plan. The JFACC is also the JTFC's principal air advisor and responsible to the latter for the co-ordination of all theatre air operations. It was intended that the JFACC and his or her HQ would normally be collocated with the JTFHQ on land or afloat but, if geographically separated, it was to be capable of stand-alone operations—usually at the air component's primary deployed operating base. However, the other deployment scenarios

that were to be enabled included the following: simultaneous deployment of two JFACHQs in support of a medium-scale warfighting (MSWF) operation and a non-warfighting operation; single JFACHQ collocated with a JTFHQ afloat; small forward JFACHQ in-theatre supported by "reach-back,"¹⁹ and UK JFACHQ providing framework for a CFACHQ supporting a UK-led European operation.

The UKJFACHQ's situation within the joint operational structure is shown in figure 1. The co-ordination linkages shown in this organizational structure resulted from the UK JFACHQ's initial leadership fully grasping, from the unit's inception, the vital need for vertical and horizontal operational integration and liaison, and subsequently institutionalizing it within its CONOPS and manning documents. Thus, air operations co-ordination centres (AOCC), comprising a senior liaison officer (the JFACC's personal representative) and other air operations staffs, were identified as being required for every joint-force component HQ; similarly, the need for the reciprocal hosting of other components' liaison elements (e.g., battlefield co-ordination detachment and maritime liaison element) was codified. The later peacetime implementation of some of these UK JFACHQ co-ordination and liaison elements and their operational debut during Op Iraqi Freedom was but one clear demonstration that the UKJFACHQ was in the vanguard of the development of UK and coalition joint and air C2 processes.²⁰

An operational JFACHQ's size would be tailored to the scale of the operation it was supporting, and the C2 specializations involved (defensive, offensive, maritime, etc.) would be matched to the operational tasks. As the JFACHQ was intended to be fully scaleable, dependent upon the size of operation to be supported, its actual size and shape would depend upon a number of criteria but principally would need to take into account the increased level and detail of planning required for offensive sorties. In particular, there would be additional focus on the requirements for targeting, weaponeering, calculation of collateral damage expectancy, composite air



Legend

AOCC - Air Operations Co-ordination Centres
 ASO - Air Support Operations
 AWC - Air Warfare Centre
 BCD - Battlefield Coordination Detachment
 CAG - Carrier Air Group
 DOB - Dispersed Operating Base
 GLO - Ground Liaison Officer
 HQ - Headquarters
 HQ STC - HQ Strike Command
 JFACC - Joint Force Air Component Commander
 JFACHQ - Joint Force Air Component HQ
 JFLCHQ - Joint Force Land Component HQ
 JLogsCHQ - Joint Force Logistics Component HQ

JFMCHQ - Joint Force Maritime Component HQ
 JFSFCHQ - Joint Force Special Forces Component HQ
 JTFHQ - Joint Task Force HQ
 L - Land
 LO - Liaison Officer
 M - Maritime
 MLE - Maritime Liaison Element
 MPA - Maritime Patrol Aircraft
 PJHQ - Permanent Joint HQ
 SF - Special Forces
 SFLE - Special Forces Liaison Element
 SHF HQ - Support Helicopter Force HQ

Figure 1. Joint operational C2 structure. (Adapted from UK JFACHQ CONOPS.)

operations (COMAO) packaging, airspace management, and combat support. It was considered that, as a worst case (i.e., most manpower-intensive), during UK MSWF operations on a 24-hour basis, a JFACHQ should be capable of handling approximately 180 offensive/defensive counterair sorties per day plus an equal number of combat support sorties (i.e., up to approximately 400 total sorties).

In looking at the generic structure above, one sees that one significant point of differ-

ence between the US and UK operational-level command structures is worthy of highlighting. This is the absence from within UK doctrine of the concept of single service commanders of deployed forces. Under US doctrine, deployed USAF elements would have a commander, Air Force forces (COMAFFOR). The COMAFFOR is the USAF-designated service-component commander responsible to the JFC for organizing, training, equipping, sustaining, and, when delegated, exercising OPCON for

employing USAF forces in support of JFC objectives.²¹ This commander may also be nominated the JFACC, but this could be a separate individual altogether. Under UK doctrine, the responsibilities of the COMAFFOR are broadly shared between the deployed JFACC and AOCinC STC acting as a supporting commander to the operation's Jt Comd (normally CJO). It is to meet the UK JFACC's portion of his AFFOR-type responsibilities that he has a support division within his HQ, typically staffing all theatre A1, A4, A6, and A8/9 issues.

The permanent peacetime structure of the UK JFACHQ was based directly on the intended operational JFACHQ structure, shown in figure 2. This HQ would support a nominated JFACC of "any cloth" (i.e., of any service) within the above national joint C2 structure. To achieve its mission, the UK JFACHQ structure was intended to provide the JFACC with an HQ that could plan air operations from the provision of input to the national military-strategic and operational-level planning processes; the joint air estimate process,

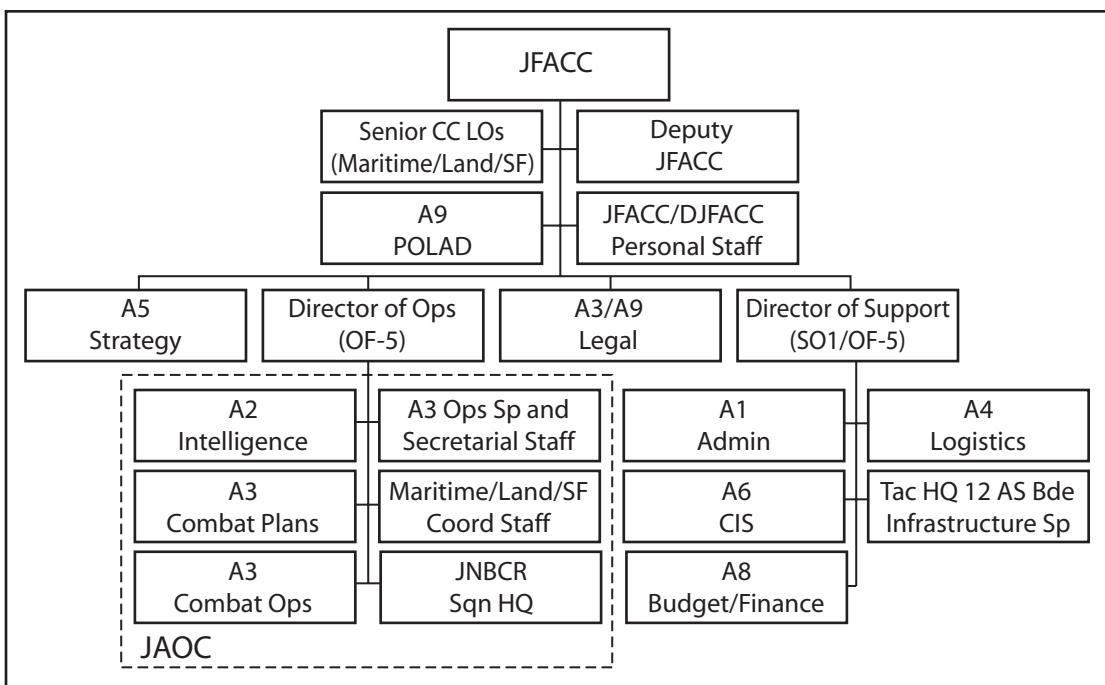
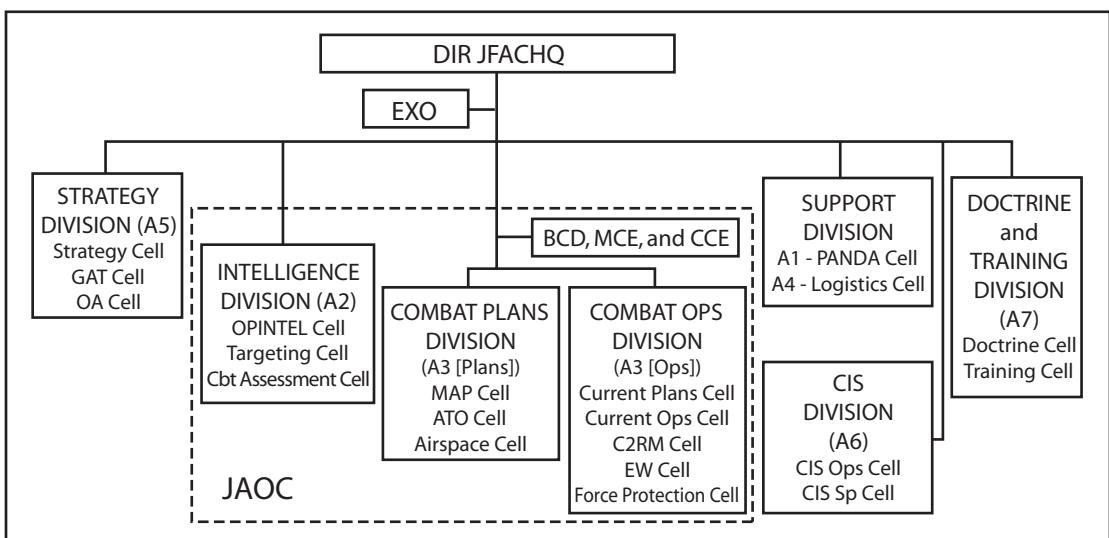


Figure 2. Generic deployed UK JFACHQ, UK national/UK framework for medium-scale warfare. (Adapted from UK JFACHQ CONOPS.)

through to JAOP development; and, once in-theatre, the development of air operations directives, air tasking orders, and airspace control orders through execution and both combat and operational assessment. The cadre UK JFACHQ was comprised of the functional areas outlined in figure 3, with core personnel representing all JFACHQ divisions and cells and, in addition, an A7 Doctrine and Training Division.²²

This cadre UK JFACHQ was configured to enable the immediate provision of a deployable, coherent core of expertise representing the majority of divisions and cells required for a UK JFACHQ conducting MSWF. For operations of a lesser scale, or for multiple small-scale operations, it was planned to draw

on cadre JFACHQ personnel to form ad hoc JFACHQ entities as required by the prevailing scenario. However, it was quite rightly identified that “available air C2 CIS equipment, is likely to limit the number of concurrent national operations that can be supported.”²³ The significant potential deficiencies in terms of both CIS and support manpower were a major driver toward the intended collocation of the JFACHQ with the JTFHQ. Again, with the intention of keeping the deployed footprint to a minimum, elements of the HQ, such as A2 and A4, would employ “reach back” to the maximum extent possible. However, despite the potential of some small savings in deployed manpower, deployment planning envisaged that the 66-strong cadre



Legend

ATO - Air Tasking Order
 BCD - Battlefield Co-ordination Detachment
 C2RM - Command and Control Resource Management
 CBT - Combat
 CCE - Command Centre Element
 CIS - Computer Information Systems
 EW - Electronic Warfare
 EXO - Executive Officer
 GAT - Guidance, Apportionment, and Targeting

JFACHQ - Joint Force Air Component HQ
 MAP - Mission Area Plan
 MCE - Major Combat Element
 OA - Operations Analysis
 OPINTEL - Operations Intelligence
 Ops - Operations
 PANDA - Personnel and Administration
 Sp - Support

Figure 3. UK JFACHQ permanent cadre organization. (Adapted from UK JFACHQ CONOPS.)

would need to be reinforced by up to 350 augmentor personnel to man a stand-alone JFACHQ to support an MSWF operation.

Operation Palliser— United Kingdom Joint Force Air Component Headquarters' Trial by Fire

In the first week of May 2000, after only some eight weeks of existence, the JFACHQ was called on to support Op Palliser in Sierra Leone. This operation was initially a non-combatant evacuation operation (NEO) that quickly developed into an intervention/peace support operation. Although small in scale, the significant challenge posed by the operation was well met by the embryonic HQ. The tempo of the operation was exhilarating for those involved. The A5 Division was called to support the strategic estimate at PJHQ on 5 May and an air estimate undertaken on 7 May. Meanwhile, UK 1 Para (1st Battalion, The Parachute Regiment), having been warned only on 6 May, successfully secured Lungi airfield in Sierra Leone over 7–8 May and began the NEO. On 9 May the air estimate was revisited to allow for the employment of seven RAF GR7 Harriers and six RN FA2 Harriers from the CVS HMS *Illustrious* (*R06*), eight C-130s, and a mix of 12 helicopters. On 11 May as the CVS entered the operat-

ing area, the JFACHQ's peacetime director was nominated as the operation's JFACC, and he and eight other cadre JFACHQ personnel deployed. By 13 May, having visited en route the JTFC at his HQ in Sierra Leone's capital, Freetown, the JFACC and his small HQ established themselves on board the CVS (see photo). While, by 12 May the NEO had largely been accomplished and was being scaled down, the nature and scale of the operation developed to meet an increasing threat posed by the rebel forces of the Revolutionary United Front. On 17 May, fixed-wing operations began over Sierra Leone, undertaking three main lines of operation: (1) "friendly" or "hostile" air-presence missions in support of the JTFC's information operation, (2) tactical air recce, and (3) training and establishing local SOPs for close air support. Over 23–26 May, 42 Commando Brigade conducted a relief-in-place with 1 Para, and, with the situation significantly more stable, over 7–8 June the CVS covertly left the joint operations area, and the JFACHQ recovered back to the United Kingdom.

The Op Palliser deployment proved to be a highly successful "proof of concept" for the JFACHQ at the national-only, small-scale level of operation. It also reinforced many known C2 truisms or already known issues. Most significant among them was the reinforcement that whenever possible, the JFACC—along with, if not his whole HQ, then at least his A5 staff—should be collocated with the JTFC HQ. In hindsight the positioning of the JFACC and his A5 on the CVS proved to be a mistake, for they were never able to "be in the JTFC's mind," and a full understanding of the JTFC's intent and CONOPS could never be gained. This location issue was compounded by the recurrent issue of a lack of operational-level communications; the CVS had only a tenuous single route for secure communications with the JTFC HQ only some 50 nautical miles away in Freetown.



JFACC HQ on board CVS HMS *Illustrious*

United Kingdom Joint Force Air Component Headquarters—An Air Command and Control Capability That's Here to Stay?

With the significantly added advantage of its experience and lessons from Op Palliser “under its belt,” the UK JFACHQ was declared as having an initial operating capability in October 2000. During the course of the next year, it continued to train its cadre personnel and procure its CIS and deployable support infrastructure (the main deployable fabricated HQ system is shown below). The development of capability continued and was marked with a declaration of full operational capability (FOC) in October 2001.

While this declaration of FOC marked a very significant step in both the RAF’s and United Kingdom’s warfighting capability, the author believes that the continued provision of a robust air C2 capability still has some doctrinal and organizational fights ahead of it. He would also argue that there are still lingering indications that, even within the RAF, the acceptance of the need for, and the concomitant cost of, providing a national air C2 capability that could effectively execute a UK MSWF air operation is far from ubiquitous or yet fully institutionalized. These indications

have included the following: the 10 percent manning cut applied to the UK JFACHQ (as part of an HQ staff review) on the same day it was declared as being FOC; the persistent failure of the UK JFACHQ to be designated and treated as an operational force element (as, for example, the USAF does with its Falconer AOCs and air operations groups/squadrons); the unit’s recent re-brigading under a training grouping within the peacetime staff structure of Headquarters Strike Command; and, during the course of researching this article, the author was unable to find on the RAF’s Web site among its listing of order of battle and organisations, any reference to its only operational-level C2 entity: the UK JFACHQ.²⁴

However, notwithstanding the concerns raised above, since its FOC declaration, the UK JFACHQ has been a leading and pivotal element in the RAF’s contributions to the coalition air C2 organizations that planned and executed Ops Enduring Freedom and Iraqi Freedom, and has been involved in nearly all significant UK joint and US coalition C2 exercises and training events. Almost from the outset, the capability and performance of the UK’s JFACHQ and its cadre personnel have demonstrated that it and they were fully living up to the RAF’s vision of being: “An Air Force that strives to be first



Deployable fabricated HQ system



and person for person remains second to none.”²⁵ In the experience of the author, it is accepted widely at home and in the United States that the RAF’s JFACHQ certainly is person for person, second to none in the provision of operational-level component C2. Indeed, the author believes that the UK JFACHQ has already all but achieved the five-year vision he helped draft for it:



*To become the UK's recognized centre of excellence for both the development and execution of all aspects of the command and control of joint air operations.*²⁶

So while it could be argued that the RAF does lead the international field in the provision of rapidly deployable operational-level air C2 ex-

pertise, the absolutely essential need to provide an air C2 capability is not yet institutionalized in the RAF as it is within the USAF. To date, advocacy for the effective implementation of an air C2 capability within the RAF has, in the main, been a “bottom-up” process, while in the USAF, air C2 advocacy starts unequivocally at the very top with successive USAF chiefs of staff personally directing its development and resourcing. The author’s fear is that until a similar situation of “top-down” advocacy and ubiquitous understanding of operational-level air C2 prevails within the RAF, the above vision that is so close to being delivered is over time in danger, through lack of resourcing as a front-line force capability, of atrophying into hallucination. □

Notes

1. German for “politics of reality”; foreign politics based on practical concerns rather than theory or ethics.
2. Ministry of Defence, *AP 3000: British Air Power Doctrine*, 3rd ed. (London: Her Majesty’s Stationery Office [HMSO], 1999), 1.3.8.
3. “Permanent Joint HQs (PJHQ),” *The Management of Defence*, <http://www.armedforces.co.uk/mod/listings/10006.html>.
4. Secretary of State for Defence UK, *Statement on the Defence Estimates 1996: Defence Policy; Joint Rapid Deployment Force*, Cm. 3223 [Command Paper] (May 1996), par. 164, <http://www.archive.official-documents.co.uk/document/mod/defence/c1tx4.htm>.
5. RAF Board Standing Committee Paper AFBSC(95)11, *Command and Control of STC Assets*, STC/9096/53/1/2/CP.
6. Secretary of State for Defence UK, *Strategic Defence Review*, Cm. 3999 (July 1998), <http://www.mod.uk/issues/sdr/intro.htm>.
7. Ibid., par. 89.
8. This ProjO was the author of this article. He had also been the squadron leader (O-4) ProjO for the introduction of the earlier UK CAOC working as the junior member of a three-man team with a group captain and wing commander.
9. UK Joint Force Air Component HQ, “Policy Statement,” UK CAOC/121/FP, 17 November 1999.
10. Ibid.
11. UK STC, *STC Structure beyond 2000 Study*, STC/101/CINCSEC, 22 February 1999.
12. UK JFACHQ *Proposed Structure and Establishment*, JFACHQ/101/1/POL, 23 November 1999.
13. *Justification of the Establishment and Infrastructure for a Joint Force Air Component Headquarters (JFACHQ)*, JFACHQ/101/Pol, 13 December 1999.

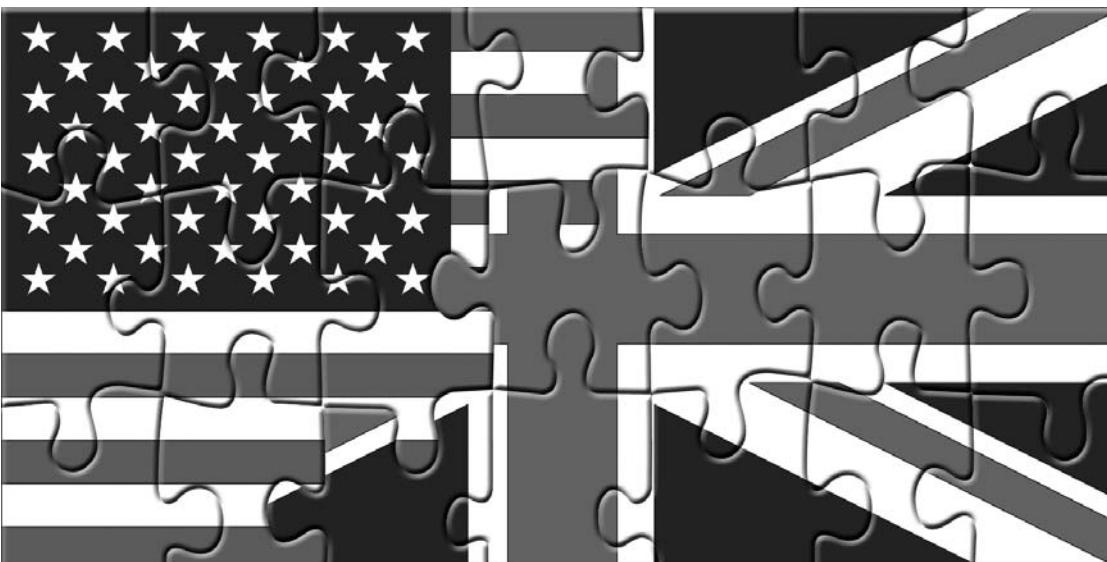
14. Ibid.
15. Ibid.
16. HQ STC, *Policy for the Introduction of UK Joint Force Air Component Headquarters*, JFACHQ/101/1/Pol, 26 January 2000.
17. Ibid.
18. Ibid.
19. The capability of a forward-deployed command to “reach back” to tap into data banks, intelligence, and imagery.
20. The need for significantly enhanced horizontal and vertical integration and liaison during the US planning for Operation Iraqi Freedom was to be one of the first observations of the United Kingdom’s air-liaison team (drawn from UK JFACHQ) when it joined the now coalition air-planning effort at HQ US Central Command Air Forces. While, as discussed, the need for liaison and co-ordination is well institutionalized in UK air C2 doctrine and practice, the USAF’s air coordination element (ACE) concept was only to manifest itself in the immediate run up to Iraqi Freedom’s execution.
21. Air Force Doctrine Document (AFDD) 2-8, *Command and Control*, 16 February 2001, 25.
22. Figure 3, Combat Service Support Division, is broken into “Support” and “CIS.”
23. HQ STC, *Policy for the Introduction of UK Joint Force Air Component Headquarters*, JFACHQ, par. 12, 26 January 2000.
24. RAF, *Royal Air Force Equipment Strength*, <http://www.raf.mod.uk/equipment/strength.html>.
25. RAF, “The Royal Air Force Vision Statement,” March 2000, <http://www.raf.mod.uk/info/statement.html>.
26. HQ STC, *Policy for the Introduction of UK Joint Force Air Component Headquarters*, JFACHQ, par. 8, 26 January 2000.

Operation Iraqi Freedom

Coalition Operations

SQUADRON LEADER SOPHY GARDNER, RAF

Editorial Abstract: The overthrow of Saddam Hussein's regime during the combat phase of Operation Iraqi Freedom between March and May 2003 marked the culmination of many years of cooperation between US and British forces in the Middle East, brought together for Operation Desert Storm and remaining for 12 years policing the northern and southern no-fly zones over Iraq side by side. In this article, the author attempts to identify the issues and challenges posed by coalition operations in Iraq as a way of understanding how to maintain and best nurture the close professional military relationship that exists between the US Air Force and the Royal Air Force as we look, collectively, to the future.



IT IS JUST 22 months since the US-led coalition entered the final planning phase in the run-up to Operation Iraqi Freedom. At the time, the debate was raging about whether the United States was going to be forced to "go it alone."¹ In a press briefing on 11 March 2003, Secretary of Defense Donald Rumsfeld said that the United States had alternative plans to invade Iraq if

Britain decided not to take part in military actions, adding, "To the extent they [Britain] are not able to participate, there are works around and they would not be involved."² In the United Kingdom (UK), the prime minister was facing significant opposition from within the Labour Party and from the general public, with demonstrations in London in mid-February 2003 drawing an estimated (and record) one

million people. These political problems created a febrile atmosphere in the run-up to a potential operation (and gave US military planners a task that, to say the least, was extremely challenging). Nevertheless, it was widely recognised that the United States would attract greater international legitimacy if it could form a coalition, particularly if this could be garnered under United Nations (UN) auspices.³ Also, the UK military contribution on the table, though small in relative numbers, provided some capabilities which were particularly valuable and included key top-up forces in areas where the United States was stretched.⁴ Going it alone was certainly not the preferred course for the United States.⁵

Of course, Iraqi Freedom was ultimately conducted as a coalition operation, with troops from the United Kingdom and Australia in combat alongside the US military. But no UN mandate was forthcoming. In the aftermath of combat operations, military commentators lined up to analyse the operation, its perceived successes and failures, and the lessons that could be learnt for the future (not least in the context of the operation as a coalition enterprise). As the British chief of the Defence Staff (CDS) said, "As an example of a coalition operation in modern times, it [the operation in Iraq] has just about everything for the analysts to scrutinise and the armchair generals to comment about."⁶ The aim of this analysis is to identify the issues and challenges that coalition operations presented during phase three of Iraqi Freedom and extrapolate from these the wider lessons which we need to identify if we are to move forward in order to prepare ourselves for future coalition operations. But firstly, five caveats. I intend to concentrate on the UK/US relationship, despite the fact that there was also a considerable Australian presence—around 2,000 personnel, comprising elements such as special forces, commando units, FA/18s, frigates, and a diving team, as well as a national headquarters similar to, though smaller than, the UK National Contingent Headquarters (NCHQ) at Camp As Saliyah in Qatar (alongside US Central Com-

mand [CENTCOM] Forward). The Australians will have their own perspective, although they may well have similar observations on the challenges of participation in this coalition endeavour. Indeed, there were many more layers of complexity to the "coalition" context of this operation, given the dozens of other nations that were involved in some way (whether in providing overflight rights, basing rights, or logistic support).⁷ Secondly, in order to address the subject holistically, I will look at the operation from the joint perspective. But, where possible, I will tease out some air-specific issues and examples, and later consider the evolving United States Air Force (USAF)/Royal Air Force (RAF) relationship in the aftermath of Iraqi Freedom. Thirdly, I will focus specifically on lessons from phase three (the combat phase that culminated in the overthrow of Saddam Hussein's regime—"the conventional combat portion").⁸ At the time of this writing, it is plain that phase four—still ongoing—has many further lessons for us, but, nevertheless, there is still much to be gained by analysing phase three and the preparations for it as a discrete package. Fourthly, it is also important to acknowledge the implications that the refusal of Turkish support had for the UK experience. Apart from the obvious time-critical challenges of the late decision to abandon the possible use of Turkey and the necessary redirection of significant quantities of troops and equipment, the demise of the "Turkey option" took US European Command (EUCOM) out of the command and control (C2) equation. Having both CENTCOM and EUCOM in the operation would have added an extra dimension, and an already complex situation would have been even more so. Thus the investigation of coalition operations here, by definition, considers coordination and cooperation with only a single US command headquarters. Finally, it is important to recognise that "what you see depends on where you sit" (here I quote the UK national contingent commander [NCC]),⁹ and my perspective will no doubt be shaped in part by my experience at the NCHQ.

Why is it important for us to understand and make progress in our thinking on coalition operations? The conflicts we now face, after the Cold War and 9/11, are very different to those for which our senior commanders were trained when they began their service. Now, in the early twenty-first century, the untethering of states from their Cold War allegiances has brought benefits for some but uncertainty (economically and politically) for many as well. The terrorist attacks of 9/11 were the most violent of the shocks which confirmed the arrival of the era of asymmetric conflict—we now live in a world where asymmetric weapons are increasingly effective, have a potentially huge destructive impact, yet are increasingly accessible to nonstate aggressors for use worldwide. And we have also entered an era when wars (for potential coalition partners in the West, at least) are increasingly engagements of choice, ideally fought in coalitions of “willing” participants. From the UK perspective, the likelihood of going it alone for high-intensity combat operations is now remote—we envisage fighting in an alliance of coalition partners, which, for larger operations, will invariably be alongside the United States. In December 2003, the Ministry of Defence’s (MOD) white paper stated that “the most demanding expeditionary operations, including intervention against state adversaries, can only be plausibly conducted if US forces are engaged, either leading a coalition or in NATO.”¹⁰ In this context, the cohesion of a coalition, particularly in the asymmetric environment, will be fundamental to the success of an operation—and a competent enemy will recognise that as our potential centre of gravity. Even an opposed but nonhostile third party can disrupt a prospective operation by attacking potential fault lines between different coalition members—in “wars of choice,” there are many obstacles facing a coalition even before it reaches the enemy. So the better our understanding of the dynamics and challenges of coalition operations, the better our preparations for the future. From the perspective of understanding the UK/US military relation-

ship, I would opine that we are at a critical point in our development. Having spent 12 years policing the skies over Iraq and working alongside the United States for more than 4,000 days of continuous operations, we now face a period of potentially limited operational contact. Indeed, progress in Iraq may lead to that contact reducing further. Thus we must now identify what work we need to do to prepare for future challenges—particularly as the only certainty is that there will be more.

As just mentioned, the preparation and planning for Iraqi Freedom took place against a backdrop of continued coalition enforcement of the Iraqi no-fly zones (mandated under UN Resolution 687) with the USAF and RAF operating alongside each other, both in the northern and southern combined air operations centres and in the air. Planning, operating, and living side by side for 12 years ensured a level of integration between the USAF and the RAF that was to prove invaluable. Although UK involvement in planning for a potential Iraqi operation only started in mid-2002, all three services had staff embedded alongside their US counterparts in US headquarters since 9/11, and Operation Enduring Freedom had US and UK personnel planning and operating alongside each other from late 2001. The UK staff at CENTCOM, based at Tampa, Florida, was led by a three-star initially and then by a two-star from May 2002. In the autumn of 2002, Air Marshal Sir Brian Burridge was designated NCC and began strengthening already established relationships at the highest levels.¹¹ Below him, the UK contingent commanders were also working alongside their counterparts. This early planning work allowed the United Kingdom visibility of, and increasing involvement and influence in, US planning, with the UK planning teams (the “embedded” staff)¹² gaining credibility with their US counterparts and superiors, such that they were later to form the core of the UK embedded staff within the deployed US headquarters.¹³ As time moved on, personal relationships developed, trust was established, and staffs increasingly appreciated the funda-

mental concept of shared risk in a coalition operation. Of course, with the political difficulties in the United Kingdom in late 2002 (and into the new year of 2003), the embedded UK planning staffs faced the challenge of maintaining momentum in the planning process, against a backdrop of uncertainty about any UK involvement. Established links, through these embedded staffs, were essential in keeping UK military planners alongside their counterparts through these difficult times. Widely acknowledged by US and UK commanders as critical to the development of the campaign plans were the exercises and rehearsals that took place in the last few months of preparations. "Rock drills" and "chair flies" (depending on the colour of one's cloth), including Exercise Internal Look in December 2002, were vital in shaking down planning and C2 issues.



Coalition aircraft patrol an Iraqi no-fly zone.

The UK force structure was announced by the secretary of state in January and February 2003, with the final announcements taking place just a month before the operation eventually began. The UK contribution was to consist of over 100 fixed-wing aircraft and 120 helicopters, an army division comprising three brigades and over 100 Challengers, and an amphibious task group, along with mine-clearance vessels, Tomahawk land-attack missile shooters, and a hospital ship. The MOD's *First Reflections* report stated that "the UK contribution was taken into the US plan where it could best complement and enhance US capabilities, both political and military."¹⁴ The

RAF deployed over 8,000 personnel with air assets tailored to US requirements (fielding, for example, precision weapons; intelligence, surveillance, and reconnaissance and C2 platforms; defensive counterair; and air refueling). "The Plan" had gone through many iterations, and as possible conflict drew closer and with no-fly-zone operations still ongoing, it became apparent that events would have to be synchronised in a number of areas.¹⁵ Here, coalition relationships at the higher military levels were critical, as the commanders tailored and reworked plans to accommodate the shifting realities of the final critical weeks. The prospect of particular enemy actions—use of Western Desert Scuds, potential actions in the Kurdish Autonomous Zone, and the threat of sabotage to the southern oilfields—coalesced into an imperative to compress the "shaping" phase to the bare minimum. The integration of the coalition staffs ensured that the coalition moved together "as one" in these final planning stages.



Challenger tank

So within the context of the coalition, what were the issues and challenges we faced—what worked and what didn't? First of all, although subject to ongoing debate, I believe coalition military C2 relationships worked well (see figure). This diagram shows how C2 was delegated within the UK military and how

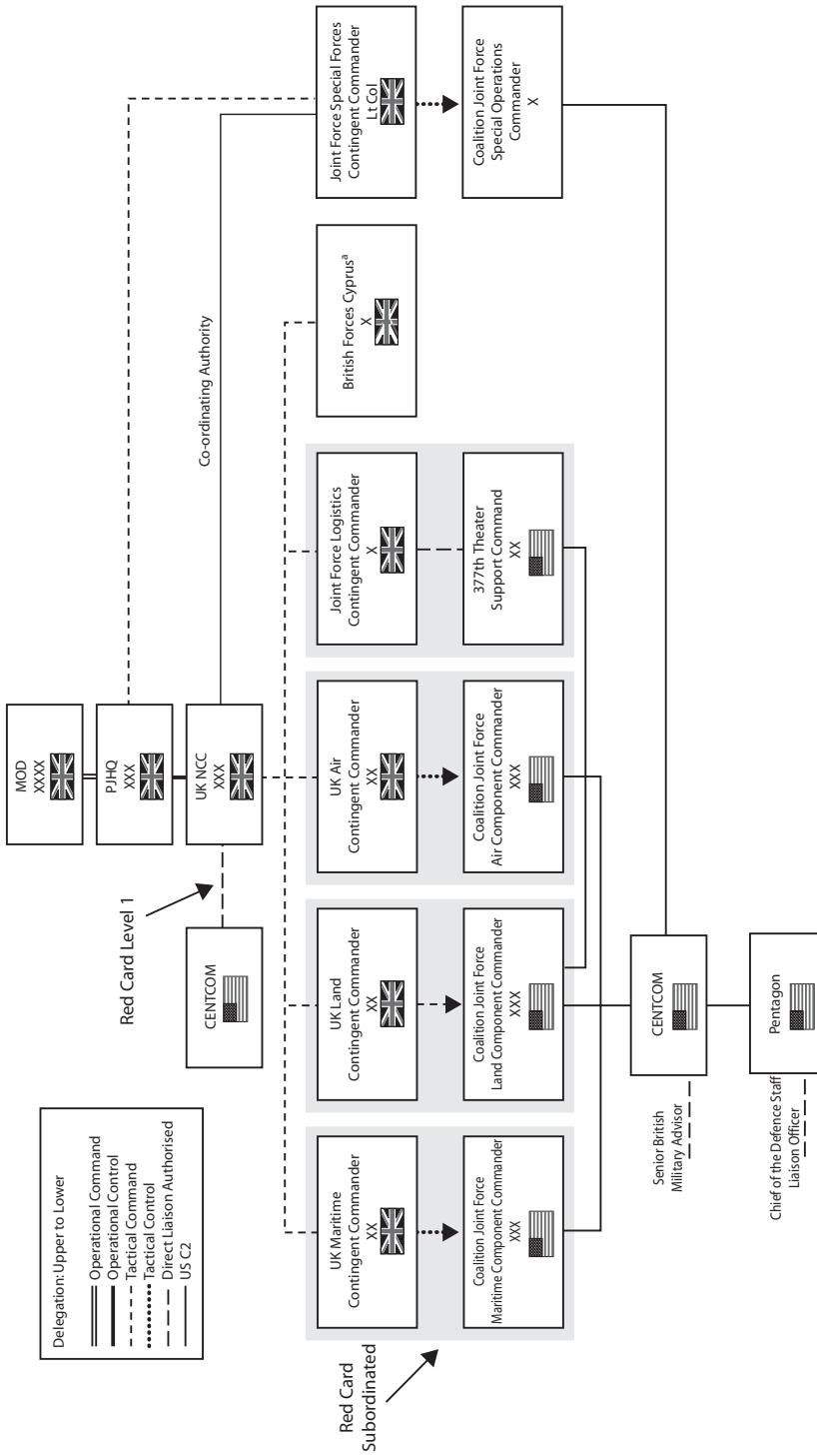


Figure. UK C2 construct and relationship with US C2

that aligned with the US military construct. Within the United Kingdom, planning and oversight of the operation was led by the MOD and the Permanent Joint Headquarters (PJHQ), which jointly form the Defence Crisis Management Organisation. The CDS appointed the chief of joint operations (CJO) at the PJHQ as the joint commander, with operational command of deployed forces. With some exceptions (such as special forces), operational control of committed forces was delegated by the CJO to the NCC, who in turn subdelegated tactical command to UK environmental contingent commanders (who could then in turn delegate tactical control to their US counterparts).¹⁶ The NCC sat alongside Gen Tommy Franks, CENTCOM commander, at Camp As Saliyah in Qatar. At the national and environmental levels in-theatre, the UK commanders were responsible for harmonising coalition activity with national political intent and legal requirements, and ensuring the effective employment of UK assets. They also held a national "red card." However, the use of that red card was avoided, on more than one occasion, because the trust that existed at all levels of command allowed informal dialogue to pre-empt any potential formal action. This approach was absolutely pivotal in minimising friction. The way in which the different national contingents integrated into their components was determined both by the nature of their environments and by their contributions. Both the UK air and maritime elements were fully integrated into their US contingent; indeed, for air, the very nature of the environment demands full integration. The land environment is somewhat different. From early on, the challenges of integrating UK land forces into a US digitised land formation were recognised. To the British command, operating in a discrete geographical area would be preferable (i.e., the southern option rather than the northern option). The change of plan following Turkey's decision not to grant basing rights meant that the UK land-contingent plan changed to having a UK division operating with the 1st Marine Expeditionary Force within a discrete geographical

area in the south of Iraq, reducing reliance on integrated C2 technological capability.

In terms of linkages between the deployed commander and the United Kingdom, the NCC worked through the CJO to the Defence Staff, with the CJO and the PJHQ acting as a buffer between London and the NCC in-theatre, allowing the NCC to concentrate on coalition military issues and his relationships with the US military and his national environmental contingent commanders. If the CJO, as joint commander, had deployed forward, as had been mooted, the combined tasks of the CJO and the NCC (looking up to London, across and up to CENTCOM, and looking after national interests at the command headquarters level) would all have been vested in a single individual/location. Considering the workload required solely for the NCC to stay alongside General Franks and the CENTCOM battle rhythm, it seems certain that other vital linkages would have suffered. During the operation, the NCC was reported in the *Daily Telegraph* as having made "the surprising revelation" that he had never spoken to the prime minister.¹⁷ "I have never spoken to Tony Blair," he said, "I answer to the Chief of the Defence Staff and the Secretary of State."¹⁸ Journalists may have found this surprising, but the NCC—and indeed the prime minister—had no need for direct contact, relying instead on the C2 chains which were already well defined in UK doctrine—and with communication routes up the levels of command to the MOD already well trodden during recent operations. The US military had a different and more fluid construct, with direct communication regularly taking place between CENTCOM and the Defense Department (Donald Rumsfeld and General Franks were in daily direct contact—often via video teleconference with the NCC alongside General Franks—and the Joint Chiefs of Staff in the Pentagon made direct calls to the US component commanders).¹⁹ The differences between the US and UK C2 constructs, particularly the political-military interface aspect, were debated by the House of Commons Defence Select Committee (HCDC) which, in its

Third Report, recommended that “the MOD consider whether the highest levels of British command structures might be made more adaptable so as to be able to operate more closely in parallel with their American counterparts, when UK and US forces are operating together.”²⁰ They expanded by saying, “It might be argued that the British system should be able to adapt to deal with the more direct political-military interface practised by the Americans.”²¹ However, in its response to the HCDC’s observations on differing UK/US structures, the government firmly stated, “We do not agree. The Coalition command structures were closely integrated.”²² In reality, relationships in-theatre were excellent, and the NCC was able to provide comprehensive feedback daily to the CJO. It is worth noting that our experience with US C2 during Kosovo was very different, with direction to senior US military commanders in-theatre filtering down a more traditional chain (more similar to the UK construct). These differences are driven as much by the personalities involved as by the mission and environment, and it is, therefore, likely that the personalities involved will have a significant bearing on future US command relationships. We cannot, obviously, predict the nature of future US administrations and the characteristics that might pertain during future conflicts (or, indeed, UK government working practices which are, perhaps to a lesser extent but more so than in the past, also personality driven), but our C2 construct is robust and, whilst clearly defined, has proved itself flexible enough to accommodate such nuances.

The UK view that participating in a coalition operation meant sharing the burden in terms of commitment of troops and assets and sharing the responsibility for the operation and sharing the risk—to our forces and to the outcome—formed the central tenet of mutual understanding between the UK and US commanders. Our willingness to commit to training and planning together, and US trust in placing UK military personnel in key positions within the US organisation, also contributed to our strong stance as we, as a

coalition (bearing in mind the centre of gravity issue), “crossed the line” together. It was not long before this was put to the test when a US Patriot battery shot down a UK Tornado GR4, with the tragic loss of the crew. Although the ultimate causes of the accident were established later on, it was known almost immediately that a US Patriot had brought down the aircraft. At the national headquarters in Qatar and in the air component headquarters (ACHQ) in Saudi Arabia, the senior US and UK commanders understood that this incident was an important test of our relationship. Both in the national and air headquarters, the US commanders contacted their UK equivalents to offer apologies and condolences. The morning after the shootdown, at a prescheduled interview, the NCC vowed that, following the tragedy, relations with the United States were as strong as ever: “A military campaign is probably the most intimate alliance you can implement. We have two nations who share the risks, share the dangers and share the rewards. You develop a bond of trust because you are taking responsibility for each other’s lives.”²³ On the same day, General Franks, in an interview with George Pascoe Watson of the *Sun*, was asked about his views on the accident and insisted that any suggestion that friendly-fire incidents would drive the United States and the United Kingdom apart was misguided: “I disagree in the strongest terms. When there are friendly-fire incidents across coalition boundaries it brings allies closer together.”²⁴ These were not empty words—in private, the commanders expressed identical views.

One of the first hurdles to face us was the synchronisation of the use of information in the campaign, particularly given the multi-faceted nature of the “audiences” that we were communicating with.²⁵ In-theatre, the approach of our militaries to the media was a case in point. In the run-up to the operation, coalition staffs worked hard to align our media strategies and define the daily rhythm (with important audiences spread across the world’s time zones), but the different national approaches were more difficult to coordi-

nate. For the ACHQ, journalists were banned from Saudi Arabia, and so the focus for journalists following the air campaign turned away from there and dispersed to the press centre and bases in Kuwait. At the national contingent level, there was a Combined Press Information Centre in Qatar (with a conference "set" described as having "a passing resemblance to the deck of Starship Enterprise" and designed by a Hollywood art director),²⁶ and the cultural challenges of working side by side with our coalition partners and the various media outlets were soon obvious. Even before we "stood up" in Qatar, the stated concept of "shock and awe" had sat uncomfortably with the United Kingdom's emphasis on the future rebuilding of Iraq.²⁷ Although the phrase "shock and awe" was studiously avoided by our US colleagues in-theatre,²⁸ General Franks's first news conference after the conflict commenced referred to a campaign "characterised by shock," delivery of "decisive precision shock," and "the introduction of shock air forces" in his initial preamble.²⁹ But this was as much due to a cultural, rather than doctrinal, difference in presentation. As Paul Adams (BBC correspondent) put it,

The tall, imposing, jug-eared Texan seemed just the man to inflict a dose of shock and awe on Iraq, while his shorter, bespectacled British counterpart appeared to embody something a little more nuanced. But while it was tempting to draw distinctions between the two major coalition partners, "shock and awe" and "effects-based warfare" were essentially the same thing. . . . "There are other ways of doing shock and awe than by breaking things," Burridge said.³⁰

In any case, as an *Air Force Magazine* article put it, "It was not the job of the Department of Defense [in the context of shock and awe] to correct expectations generated by others. Indeed, not doing so may have been a form of passive disinformation."³¹ This was, however, the first and only coalition conference in Qatar. While General Franks and his media spokesman, Gen Vincent Brooks, presented to the media, the UK, Australian, Danish, and Dutch national commanders stood in atten-

dance on the podium. None was given a speaking part in a conference that lasted well over an hour, and the impression given was not the one that we wanted to project. Nor did it reflect reality, for the NCC had anything but a solely "walk-on part," and it was decided after this that unilateral media handling was likely to be the better option. No doubt, the differing attitudes of our national press had a great deal to do with the way that we viewed media handling—the US military was certainly surprised at the relatively hostile treatment we received from the UK media,³² while the patient and sometimes supine attitude of the US press to some fairly poor treatment (in comparison to what we knew our UK press would expect) by the US military media handlers was a source of some surprise to us.³³ Perhaps Paul Adams's description of our differences seems harsh, but it also sums up the perceptions of the press with which both militaries were attempting to grapple:

Reporters desperate for facts swarmed every time a clean-cut, polite American military spokesman ventured into the crowded corridors. But the constraints imposed by "operational security" or, just as often, a reluctance to speak out of turn, meant we always came away disappointed. . . . A small team of British media handlers worked hard to fill the void. . . . It was an adult way of doing things, and one that the Americans could not, or would not, emulate.³⁴

In terms of information, there was also an issue of marrying our military objectives for the operation. The published UK government military-campaign objectives for the operation cited the prime objective as "to rid Iraq of its weapons of mass destruction and their associated weapons programmes and means of delivery."³⁵ For the United States, the prime objective was to "end the regime of Saddam Hussein."³⁶ The US objectives referred to terrorism in their third and fourth objectives, yet the United Kingdom referred to terrorism only under "wider political objectives in support of the military campaign."³⁷ The key to marrying these two perspectives under one coalition banner was, of course, our united attitude to Saddam Hussein's regime. As the UK

government articulated it, “The obstacle to Iraq’s compliance with its disarmament obligations under relevant [UN Security Council resolutions] is the current Iraqi regime. . . . It is therefore necessary that the current Iraqi regime be removed from power.”³⁸ The two perspectives were as one on that aim, but it still required a careful approach by the US and the UK national commands to ensure that that fact was fully understood.

An early (precampaign) issue that has crystallised into a “lesson learnt” for coalition operations was that of basing of assets. The United Kingdom and the United States agreed that the United States would lead in negotiating host nation (HN) support for coalition assets. In the early stages of planning, this seemed a pragmatic approach, but as time passed and HN views hardened, it became apparent that, at least from the HN’s view, one country’s aspiration for HN support would be considered in isolation from any other’s, regardless of how the request had been submitted. This may seem an obvious strategy from the HN with hindsight, but at the time a united coalition approach seemed to be the most appropriate course. As it turned out, it probably did neither the United States nor the United Kingdom any favours. At short notice, the flip side of the coalition equation came into play, with the United States’ assistance and flexibility enabling our deployment by accommodating our changing plans (due to the HN issue) for air and land basing within their own plan.

Another challenge that benefited from much thought and application before the campaign started was the issue of national rules of engagement and delegation given to commanders in-theatre. During Kosovo, Gen Wesley Clark had expressed his frustration with laborious coalition approval processes.³⁹ Both the NCC and the air contingent commander agreed after Operation Iraqi Freedom that, for this operation, the final delegations were infinitely more flexible and coherence across the coalition in terms of delegations was critical to UK credibility in a high-tempo campaign with an air effort so

vast that up to 1,700 sorties a day were being launched.⁴⁰ Of course, there were occasions when our UK viewpoint on how an “effect” would be interpreted differed from the US viewpoint. In the case of Iraqi Freedom, where the United Kingdom saw the potential for disagreement over the national acceptability of a particular course of action, resort to red cards was not the preferred option, and at the NCHQ level, differences of opinion were routinely resolved through debate and discussion. In fact, the United Kingdom was able to offer—and the United States was comfortable being offered—British advice even when the United Kingdom was not directly involved. As Air Marshal Burridge said in evidence to the HCDC: “Where I believe the interesting bit occurs—and I think this is where we added considerable value—was in saying, yes, okay, this is an American target, American platform, no British involvement, but actually let me just say how this might look viewed in Paris, Berlin or wherever.”⁴¹

Sharing of information and the interoperability of information systems were among the greatest challenges facing the coalition. Thankfully, the limited extent of the Iraqi Freedom coalition made information and intelligence sharing easier than it would have been in a larger coalition. However, the sharing of information is at the centre of the relationship of trust that is needed in a coalition, and during Iraqi Freedom, the frustration came in translating the trust engendered at the highest levels into sensible information sharing at the lower levels. The issue was not one of releasability per se—more that each individual in the chain felt beholden to check the releasability of the information before acting on any requests. The system was therefore slow and cumbersome, rather than responsive and agile. Computer information systems (CIS) were also a problem, with the United States operating on its infinitely superior Secret Internet Protocol Router Network (SIPRNET) system, which was not releasable to UK eyes without US supervision, while the United Kingdom operated its myriad CIS’s and had access to CENTRIX, a US CIS, with

Australian/UK access, onto which Australian-/UK-releasable SIPRNET information could be transferred. However, the process was manual rather than automatic, requiring our US counterparts to find the time (in a high-tempo operational environment) to decide on and implement the transfer of information. Again, these challenges tended to be overcome through face-to-face dialogue and the development of good working relationships, although not without costs to efficiency.

So where do our experiences during phase three leave us 22 months on? Notwithstanding ongoing events in Iraq, there are some important lessons from Iraqi Freedom for the United Kingdom and the United States, just as there is a recognition that our operational interoperability (both in terms of how we think we fight and how we technically fight) must be maintained, or we may suffer for it next time. There are no guarantees, if there is a next time, that we will have as much planning time (even though the political will to allow us to engage in planning, even if future intent is uncertain, can give us crucial influence at the earliest stage possible),⁴² and it is almost a given that we will not have just spent 12 years side by side in-theatre in the run-up to a large-scale operation. In fact, recognition that things will not be the same "next time" is a key lesson in itself.

Importantly, we must offer capabilities which are of utility and influence, and which can fill gaps in and complement US capability. Tactical recce and the Stormshadow cruise missile are good examples from the air contingent of capabilities that the United Kingdom alone could offer, while tankers and E-3s are examples of assets which we could offer that were in short supply. If the United Kingdom can perform valued tasks that the United States requires (and other allies may not be able to field), our influence will be felt: "The significant military contribution the UK is able to make . . . means that we secure an effective place in the political and military decision-making processes."⁴³ Sharing contentious and dangerous activities, not just those which are "niche" or in short supply, is another vital way

that our military contribution can demonstrate commitment and determine the value in which we are held (and the influence which we can bring to bear).

We must also recognise the value that sensible delegations had in the trust that the United States put in the United Kingdom. These delegations allowed us to participate in some high-importance, time-critical targeting decisions and ensured that we were included fully in decision making. The marriage of political ends is a similarly critical but extremely sensitive area of coalition cooperation, and we will always need to be alive to the need to ensure that coalition members' political ends (if different or differently prioritised) are understood, enmeshed, and met. These political coalition issues will always be sensitive and challenging to planners, but they are critical to the successful execution of a coalition operation.

Most pressingly important to the United Kingdom and the United States is the challenge of replacing the operational linkages which already existed (particularly between our navies and air forces) as a result of the 12 years of coalition work leading up to Iraqi Freedom. We need to stay alongside each other by training and exercising together, developing doctrinally together, and war gaming as a coalition. From the RAF's and the USAF's perspective, this has been a priority since phase three of Iraqi Freedom finished. The two forces have established an engagement initiative designed as a forum to take forward work on interoperability issues under the RAF chief of the Air Staff and the USAF chief of staff to ensure that we are working and training together to prepare for the future. Some of this is practical—ensuring that our exchange programmes develop over time and ensuring that we maximise opportunities to exercise together—and some is technical, and in this area equipment procurement and development are central. As the CDS outlined,

Whilst there are real opportunities for interoperability as forces modernise, there is equally the risk that this very modernisation could undermine the unity of effort in any coalition. The technological gap between digitised and ana-



Tornado armed with Stormshadow cruise missiles

logue contingents will impact severely on the principal advantage of digitisation—that of a force’s ability to rely on tempo as a major ingredient of combat power—and in warfighting this could impact to a point where two elements become operationally irreconcilable.⁴⁴

In the USAF, “plug and play” is becoming (quite understandably) the mantra. Commanders are not interested in new equipment which cannot integrate into the battlespace and, importantly, cannot talk without a “man in the loop” to the next piece of equipment. As Lt Gen Ronald E. Keys⁴⁵ states,

Whatever is on the inside of your widget or gadget can be proprietary, but what comes out of the little plug in the front or back of it must speak the language of Airmen, and must work with my other equipment or systems without any third party translation or integrators needed. This is the rule for the 21st century USAF and if you can’t abide by it . . . we won’t buy it.⁴⁶

The RAF has to maximise its presence alongside the USAF as they develop interoperability priorities and policies. It is also recognised by the USAF/RAF initiative that the cultural and intellectual aspects of fighting together are fundamental to progress. As well as interaction at senior levels (in meetings, at conferences, at war games, etc.), it is important to develop closer links further down the chain of command. There are several initiatives now in their developmental stages which aim, across the ranks, to develop our understanding of each other’s cultural ways of doing business and grow a new generation of Airmen who see their US counterparts as natural and familiar partners.⁴⁷ This approach should complement our commitment to the policy of embedding UK staffs in US command staffs for future operations—a policy which will remain absolutely key to successful cooperation in the future.

We, the US and UK militaries, left the end of phase three of Operation Iraqi Freedom having worked successfully as a coalition and having faced practical challenges along the way. We can see that these were largely overcome through a combination of fortuitous timing (an extended planning period), strong personal relationships (particularly at the senior levels), mutual dependence and burden sharing (in terms of the United Kingdom providing capabilities which were of unique value to the coalition effort and the recognition, on both sides, that this was a journey we would travel together as a coalition "for better or for worse"), and a motivation to find common ground and to engineer solutions to any problems that threatened the coalition's integrity. Most importantly, trust was established at all levels. For the future, whether we consider either mindset, doctrine, and culture, or equipment, concept of operations, and inter-

operability—it is mutual cooperation and contact which will provide us with the best chance of staying in step. This will allow us to understand what we can offer each other, how we can best move forward together, and in which areas we need to concentrate our efforts in order to maintain momentum. Most importantly, a strong and close professional relationship will be the key—as it was for Operation Iraqi Freedom. As the MOD concluded in its *First Reflections* report,

Working in a coalition brings political, diplomatic and military advantages, including the aggregation of capabilities, flexible war-fighting options and the sharing of intelligence and risk. . . . At the operational and tactical levels, the planning and conduct of the operation was facilitated by the close professional relationship that has grown up between the UK and the US.⁴⁸

We must ensure it is maintained—future coalition operations will depend on it. □

Notes

1. E. MacAskill, R. Norton-Taylor, and J. Borger, "US May Go It Alone As Blair Is Caught in Diplomatic Deadlock," *The Guardian*, 12 March 2003.
2. "US Willing to Go It Alone," 12 March 2003, <http://aljazeera.info/News%20archives/2003%20News%20archives/March%202003%20News/12%20news/US%20is%20willing%20to%20go%20it%20alone%20aljazeera.info.htm>.
3. Anthony H. Cordesman, *The Iraq War: Strategy, Tactics, and Military Lessons* (Westport, CT: Praeger, published in cooperation with the Center for Strategic and International Studies, 2003), 487–91.
4. Williamson Murray and Robert H. Scales Jr., *The Iraq War: A Military History* (Cambridge, MA: Belknap Press of Harvard University Press, 2003), 132.
5. General Franks: "I would honestly say to the people of Great Britain, thanks for committing this magnificent UK force to be part of this coalition. It's powerful, it's effective and I'm glad to march forward beside the Brits." George Pascoe Watson, "I'm Proud to March with Brits Says General Tommy Franks," *The Sun*, 24 March 2003. Similar sentiments also witnessed personally in conversation.
6. "The Military Challenges in Coalition Operations," CDS address to Defence Systems and Equipment International (DSEI) Conference, 11 September 2003, <http://www.deso.mod.uk/archive> (accessed 29 May 2004).
7. President Bush confirmed on 19 March 2003 that more than 35 countries were supporting the coalition.
- "President Bush Addresses the Nation," <http://www.whitehouse.gov/news/releases/2003/03/20030319-17.html>.
- Robert S. Dudman, "The Three Week War," *Air Force Magazine*, March 2004, 2.
- Air Marshal Sir Brian Burridge: "I should preface all my remarks with 'What you see depends on where you sit.' Oral evidence to House of Commons Defence Select Committee (HCDC), 11 June 2003, Q. 225.
- Delivering Security in a Changing World: Defence White Paper* (United Kingdom: Ministry of Defence, December 2003), par. 3.5.
- Now air chief marshal, commander in chief, Strike Command.
- Air Marshal Burridge: "[The UK embedded staff] were members of General Franks' staff, so instead of an American officer doing a particular job, there would be a British officer. That gave us linkage and connectivity between our two headquarters." Oral evidence to HCDC, 11 June 2003, Q. 217.
- "We were able to work closely with the US and influence the campaign from initial planning to execution through high-level political contacts . . . as well as by the presence of a significant number of embedded UK officers in key US headquarters." *Operations in Iraq: First Reflections* (United Kingdom: Ministry of Defence, July 2003), par. 6.2.
- Ibid., 19.

15. "Too many to list!" as Gen T. M. Moseley commented. Speech to Royal Air Force Air Power Conference, 11 May 2004.

16. Air Marshal Burridge: "I sat below [the CJO] and I had operational control, so I was given the tasks and the forces and then I just had to match them into the American plan. Tactical command, in other words executing the individual tasks, was held by the UK 2nd officers who were contingent commanders within each environment, air, land, maritime. They handed tactical control to their opposite number who was in all cases a 3rd American, who would actually be the person who owned that part of the plan." Oral evidence to HCDC, 11 June 2003, Q. 220.

17. N. Tweedie and M. Smith, "There's No Hiding Place, Say Allied Military Chiefs," *The Daily Telegraph*, 15 March 2003.

18. Ibid.

19. Moseley, speech.

20. George Bruce, *Lessons of Iraq: Third Report of Session 2003–04* (United Kingdom: Parliament, House of Commons Defence Select Committee, 16 March 2004), par. 84.

21. Ibid.

22. *First Special Report: Lessons of Iraq: Government Response to the Committee's Third Report of Session 2003–04* (United Kingdom: Parliament, House of Commons Defence Select Committee, 26 May 2004), par. 25.

23. Witnessed personally during television interviews with the NCC, 23 March 2004—subsequently widely quoted.

24. Watson, "I'm Proud to March with Brits."

25. Not just the United Kingdom and the United States, but the "Arab Street," other nations, the Iraqi people, and, of course, the Iraqi regime.

26. "Iraq War: Franks Enters the Fray of 'Hollywood' Briefing Room," *Birmingham Post*, 24 March 2003.

27. Harlan K. Ullman, principal architect of the "shock and awe" concept said, "The phrase [shock and awe] as used by the Pentagon now, has not been helpful—it has created a doomsday approach—the idea of terrorizing everyone. In fact, that's not the approach. The British have a much better phrase for it: effects-based operations." John T. Correll, "What Happened to Shock and Awe?" *Air Force Magazine*, November 2003, 55.

28. "The Department of Defense did not officially or explicitly endorse Shock and Awe, but traces of it could be discerned in statements by top leaders." Ibid., 52.

29. "Briefing with CENTCOM Commander General Tommy Franks," 22 March 2003, http://www.centcom.mil/CENTCOMNews/news_release.asp?NewsRelease=20030344.txt.

30. Paul Adams, "Shock and Awe: An Inevitable Victory," in *The Battle for Iraq: BBC News Correspondents on the War against Saddam and a New World Agenda*, ed. S. Potter (London: BBC Worldwide Limited, 2003), 106–8.

31. Correll, "What Happened?" 57.

32. At a CENTCOM press conference, after another aggressive question from a BBC reporter, General Franks commented, "Boy, there's a lot of you BBC guys" (witnessed personally on 23 March 2003).

33. Adams, "Shock and Awe," 106–8.

34. Ibid., 110.

35. "Iraq: The Military Campaign Objectives," 17 March 2003, <http://www.number-10.gov.uk> (accessed 30 May 2004).

36. "Briefing with CENTCOM Commander General Tommy Franks."

37. "Iraq: The Military Campaign Objectives."

38. Ibid.

39. "A brief assessment of the political-military interactions that took place during Operation Allied Force shows an existing 'delta' between the technologically inspired greater operational speed capabilities that were offered and used by NATO and the tortuously slow political decision-making mechanisms of the North Atlantic Council. . . . In consequence, General Clark was unable to unleash more sophisticated capabilities and thereby obtain a greater degree of operational speed." T. D. Young, "The Revolution in Military Affairs and Coalition Operations: Problem Areas and Solutions," *Defense and Security Analysis* 19, no. 2 (2003): 111–30.

40. Air Marshal Glenn Torpy, UK air contingent commander: "What was different was that we were given greater delegation on this occasion because we knew that the tempo of the operation would demand decisions to be taken quickly and I could not go right the way back through the process, back to the PJHQ and MOD, which we could do when we had the luxury of time for our southern no-fly zone operations." Oral evidence to HCDC, 5 November 2003, Q. 1256.

41. Air Marshal Burridge, oral evidence to HCDC, 11 June 2003, Q. 251.

42. "Come early and a nation can influence the plan as we did with CENTCOM albeit with no commitment to military action. Come late, and the plan is in concrete." Air Marshal Burridge, address to DSEI Conference, 11 September 2003, <http://www.deso.mod.uk/archive> (accessed 29 May 2004).

43. *Delivering Security in a Changing World*, 8.

44. "Military Challenges in Coalition Operations."

45. Formerly deputy chief of staff for air and space operations, USAF. General Keys has been selected for reassignment as commander of Air Combat Command.

46. Lt Gen Ronald E. Keys, quotation, 23 June 2004.

47. Cultural visits, mini-exchange tours, and an overhaul of the exchange programme are just some of the projects established under USAF/RAF engagement.

48. *Operations in Iraq: First Reflections*, par. 7.



New USAF Doctrine Publication

AFDD 2-2.1, *Counterspace Operations*

LT COL PAULA B. FLAVELL, USAF

BECAUSE OF THE importance of space superiority, the Air Force published new doctrine on 2 August 2004: Air Force Doctrine Document (AFDD) 2-2.1, *Counterspace Operations*. Gen John P. Jumper, US Air Force chief of staff, asserts that “space superiority is as much about protecting our space assets as it is about preparing to counter an enemy’s space or anti-space assets” (1). The new publication (pub) defines key terms characteristic of counterspace operations and highlights factors that Airmen must take into consideration when they plan/execute those operations.

AFDD 2-2.1 defines the key term *space superiority* as “the degree of control necessary to employ, maneuver, and engage space forces while denying the same capability to an adversary” (55). The pub reinforces existing definitions found in AFDD 1, *Air Force Basic Doctrine*, 17 November 2003, which states that “counterspace involves those kinetic and non-kinetic operations conducted to attain and maintain a desired degree of space superiority by the destruction, degradation, or disruption of enemy space capability” (42).

AFDD 2-2.1 highlights the linkage between the concepts of space situational awareness (SSA) and counterspace operations, explaining that SSA “is the result of sufficient knowledge about space-related conditions, constraints, capabilities, and activities . . . in, from, toward, or through space” (2). SSA accomplished by space surveillance, reconnaissance, the monitoring of the space environment,

and collection/processing of space-systems intelligence provides the planner, commander, and executor the ability to develop counterspace courses of action.

Like counterair operations, counterspace operations have offensive and defensive components. On the one hand, according to AFDD 2-2.1, *offensive counterspace* (OCS) operations “deceive, disrupt, deny, degrade, or destroy adversary space capabilities” at a time and place of our choosing through attacks on the space systems, terrestrial systems, links, or third-party space capabilities (2). The early initiation of counterspace operations, ranging from dropping ordnance on space-systems nodes to jamming enemy-satellite uplink or down-link frequencies, can result in an immediate advantage in space capabilities and control of the space medium. On the other hand, *defensive counterspace* (DCS) operations are “key to enabling continued exploitation of space by the US and its allies by protecting, preserving, recovering, and reconstituting friendly space-related capabilities” (3).

AFDD 2-2.1 addresses the need to consider both offensive and defensive actions, noting that “counterspace operations are conducted across the tactical, operational, and strategic levels of war by the entire joint force. . . . Within the counterspace construct, any action taken to achieve space superiority is a counterspace operation” (2).

As this pub points out, denying an adversary access to space can carry many intended and unintended consequences by transcending

military operations, thus potentially affecting a nation's economic and diplomatic position. Tactical actions must support operational- and strategic-level objectives and strategies. Planning and executing counterspace operations require different levels of approval authority, depending on the type of operation, potential collateral effects on civilian and/or third-party populations, ownership of the target, and the policy regarding the type of operation. Furthermore, any counterspace operation must be deconflicted with other friendly operations to minimize unintended effects. Other planning and execution considerations that accompany counterspace operations include the following:

1. Airmen require a long lead time for SSA in order to develop a good course of action.
2. Space centers of gravity are not clear cut.
3. The enemy may have his own counter-space capabilities.

Airmen must also note certain targeting considerations:

1. All satellite-systems ground stations and low-orbit satellites are subject to attack.

2. Satellite links are vulnerable to jamming.

Looking to the future, AFDD 2-2.1 notes that

the US's space advantage is threatened by the growth in adversary counterspace capability and the adversary's increased use of space. In the past, the US has enjoyed space superiority through our superior technology development and exploitation, advanced information systems, and robust space infrastructure. The ability to sustain this advantage is challenging and may be eroding as our adversaries close the gap through technology sharing, materiel acquisition, and purchase of space services. (4)

Well aware of these future challenges, General Jumper, again using AFDD 2-2.1 as a forum for emphasizing the importance of space, states that "counterspace operations, both defensive and offensive, supported by situational awareness, will ensure we maintain our superiority in space" (1).

To Learn More . . .

- Air Force Doctrine Document 2-2.1. *Counterspace Operations*, 2 August 2004. http://www.dtic.mil/doctrine/jel/service_pubs/afdd2_2_1.pdf.
- Air Force Doctrine Document 2-2. *Space Operations*, 27 November 2001. <http://www.e-publishing.af.mil/pubfiles/afdc/dd/afdd2-2/afdd2-2.pdf>.
- Department of Defense Directive 3100.15. *Space Control*. Classified (see SIPRNET).
- Joint Publication 3-14. *Joint Doctrine for Space Operations*, 9 August 2002. http://www.dtic.mil/doctrine/jel/new_pubs/jp3_14.pdf.
- Presidential Decision Directive–National Security Council-49/National Space Technology Council-8. *National Space Policy*, 14 September 1996. <http://www.ostp.gov/NSTC/html/fs/fs-5.html>.
- Air Force Doctrine Document 1. *Air Force Basic Doctrine*, 17 November 2003. <https://wwwdoctrine.af.mil/Main.asp>.
- Department of Defense Directive 5101.2. *DoD Executive Agent for Space*, 3 June 2003. http://www.dtic.mil/whs/directives/corres/pdf/d51012_060303/d51012p.pdf.

Dynamic Followership

The Prerequisite for Effective Leadership

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Editorial Abstract: Rather than encouraging leaders to mentor followers to “follow me” as an imitation learning imperative, leaders may mentor to specific and objective abilities/traits to create dynamic subordinates. These dynamic follower competencies form a foundation from which follower initiative can grow to leader initiative more naturally. The identified follower competencies help leaders focus their mentoring efforts. This approach encourages followers to develop fully, based on their personalities, strengths and weaknesses, and situational factors.



We have good corporals and good sergeants and some good lieutenants and captains, and those are far more important than good generals.

—Gen William T. Sherman

ARE YOU A leader? A follower? The reality is that we fulfill both roles simultaneously from the day we enter military service, throughout our career, and well into our “golden years.” We are followers—following is a natural part of life and an essential role we play in fulfilling our war-fighting roles and missions. Since most institutions conform to bureaucratic or hierarchical organizational models, the majority of any military institution’s members are, by defi-

nition, *followers* more often than leaders. Few professional-development programs—including those of the US military—spend time developing effective follower cultures and skills. Instead, commissioning sources, college business programs, executive seminars, and professional military education curricula focus on developing leaders. Some people would argue that the various military technical schools fill the gap in follower development for career-minded Airmen, both commissioned

and noncommissioned. This approach only diminishes the value that followers contribute to war fighting. If technical training and continuing education/leadership development at the right time in a person's career is an accepted "booster shot" for developing effective followers, why not implement a similar strategy to shape effective leaders? The answer is that most of us intuitively know that such measures fall far short of the requirement to attract and retain people of the caliber the Air Force needs in the future. In other words, our service expends most of its resources educating a fraction of its members, communicating their value to the institution, and establishing career paths founded on assessing selected leadership characteristics—while seemingly ignoring the vast majority who "merely" follow. This strategy is inadequate for honing warrior skills within the rapidly transforming strategic environment that will prevail for the foreseeable future.

The present formula promotes the illusion of effectiveness, but it does not optimize institutional performance. How do we know this? A cursory review of retention rates among Air Force members indicates that among "followers," instilling institutional commitment continues to be a persistent problem. For example, according to Air Force Personnel Center statistics, the service seeks to retain 55 percent of first-term Airmen, 75 percent of second-term Airmen, and 95 percent of the career enlisted force. With the exception of fiscal year 2002 when stop-loss measures prevented separation actions, the Air Force has not met these modest goals for all three noncommissioned categories since fiscal year 1996.¹ For crucial officer specialties, the story is not much better.

The Air Force's rated career fields (pilots, navigators, and air-battle managers) consistently retain approximately 50–70 percent of their officers. Active duty service commitments and career incentive pays, however, tend to skew retention data in the aggregate. Non-rated operations officers (space, intelligence, and weather) retain 48–65 percent of their members, while mission-support officers elect to stay in the service at an average rate of 44

percent.² Air Force efforts to boost these numbers tend to focus on "quality of life" issues—a catchall category that includes projects such as better pay, housing, and base facilities. All of these initiatives are important and appreciated, but they fail to address the role individuals play in accomplishing the unit's mission as followers. Rather than focusing on the negative aspects of worker dissatisfaction, follower-development programs should take advantage of opportunities to instill/reinforce institutional values, model effective follower roles and behaviors, and begin the mentoring process.

Developing dynamic followership is a discipline. It is jointly an art and a science requiring skill and conceptualization of roles in innovative ways—one perhaps more essential to mission success than leader development. Without followership, a leader at any level will fail to produce effective institutions. Valuing followers and their development is the first step toward cultivating effective transformational leaders—people capable of motivating followers to achieve mission requirements in the absence of hygienic or transactional rewards (i.e., immediate payoffs for visible products). This shift away from transactional leadership demands that we begin developing and sustaining transformational followership to enhance transformational leadership. A dynamic followership program should produce individuals who, when the moment arrives, seamlessly transition to lead effectively while simultaneously fulfilling their follower roles in support of their superiors. This goal helps us identify a strategy for follower development. Just as studies have identified desirable characteristics for effective leaders, so can we propose *follower competencies* upon which to base follower development in terms of specific skills and educational programs to advance critical thinking toward sound judgment. This approach demands that leaders recognize and fulfill their responsibilities in developing *specific follower attributes or competencies* within their subordinates. Leadership-development experts have proposed models for identifying desirable traits in leaders; simi-

larly, followership studies can benefit from the discipline inherent in model development. A model that concentrates on institutional values and follower abilities would provide a starting point for synergistically integrating leader-follower development programs. As leaders capitalize on their followers' competencies, they will equip their organizations' members to achieve the visions they articulate for mission effectiveness.

Revolutionizing Traditional Leader-Follower Roles

Institutional changes in leader-follower roles and relationships lie at the root of why the Air Force needs to engage in dynamic followership programs to enhance its warrior culture. These shifts mirror similar shifts in business and industry. One researcher noted

increasing pressure on all kinds of organizations to function with reduced resources. Reduced resources and company downsizing have reduced the number of managers and increased their span of control, which in turn leaves followers to pick up many of the functions traditionally performed by leaders. . . . Furthermore, the nature of the problems faced by many organizations is becoming so complex and the changes so rapid that more people are required to solve them. . . . In general, making organizations better is a task that needs to be "owned" by followers as well as leaders.³

Corporate downsizing, increased pressure to deliver results, and increasing span of control for leaders are familiar concepts to military members. What some businesses and military institutions have missed as these pressures exerted themselves on leader-follower cultures is that leaders have ample opportunity to learn strategies and techniques for coping with change in the workplace. Followers, however, generally face two choices: (1) undergoing on-the-job learning that levies leadership responsibilities on them without commensurate authority or (2) entering a defensive crouch against the increasing workload. Both choices erode individual morale and institutional mission effectiveness—neither proves effective

for producing capable followers within our Air Force.

According to Robert E. Kelley, a prominent social scientist in followership studies, "What distinguishes an effective from an ineffective follower is enthusiastic, intelligent, and self-reliant participation—without star billing—in the pursuit of an organizational goal." Zeroing in on the task of developing followers, Kelley argues that "understanding motivations and perceptions is not enough."⁴ He focuses on two behavioral dimensions for determining follower effectiveness: critical thinking and participation.

Critical thinking involves going beyond collecting information or observing activities passively. It implies an *active mental debate* with things or events that we could otherwise process at face value. The active, independent mind confronts the situation and scrutinizes it closely, as if to stand it on its head or on its side, conducting a thorough examination of its far-reaching implications or possibilities. Many current, successful leaders cite critical thinking as a behavior they expect of their most valued followers. As for the concept of participation, a person engaged actively and comprehensively brings to mind an image of someone "leaning forward" *into the situation* at hand. This posture enables the person and those he or she affects to be in a position to *anticipate* requirements and plan accordingly. Conversely, passive individuals remain trapped in a perpetually reactive mode, placing themselves at the mercy of the prevailing current rather than preparing for impending tidal changes. In combination, critical thinking and participation generate four follower patterns.

Kelley argues that effective followers tend to be highly participative, critical thinkers. This type of person courageously dissents when necessary, shares credit, admits mistakes, and habitually exercises superior judgment. Kelley suggests that this follower possesses several essential qualities: self-management, commitment, competence (master skills) and focus, and courage (credibility and honesty).⁵ Although many people would recognize these traits as leadership competencies, according

to Kelley, they remain paramount to the supporting role a follower plays. This type of follower represents the essential link between leader and follower cultures. As leaders develop and transmit the institution's "big picture," they naturally turn to such individuals to help them communicate that vision to the rest of the institution. The effective follower's invaluable perspective permits others to separate the essential tasks required for mission accomplishment from the minutiae. As the leader leads, the follower actively participates in task completion toward mission accomplishment; the leader-follower relationship produces the dynamics necessary for the team to accomplish the mission. Those who prove able to follow effectively usually transition to formal leadership positions over time. More than any other measurable attribute, this phenomenon clarifies the interactive nature of the leader-follower relationship.

Kelley characterizes the other three follower types (table 1) as follows:

"Sheep" are passive and uncritical, lacking in initiative and sense of responsibility. They perform tasks given them and stop. "Yes People" are livelier, but remain an equally unenterprising group. Dependent on a leader for inspiration, they can be aggressively deferential, even servile. . . . "Alienated Followers" are critical and independent in their thinking, but fulfill their roles passively. Somehow, sometime, something "turned them off," prompting them to distance themselves from the organization and ownership of its mission. Often cynical, they tend to sink gradually into disgruntled acquiescence.⁶

Kelley offers an important observation with regard to some followers' influence on some leaders, cautioning that the latter remain comfortable with—or even embrace—the "yes people" or other less effective followers. Follower development is a leader's utmost responsibility. Willingness to move beyond comfort zones is fully expected of tomorrow's leader. Emerging security threats demand that we do so.

Other researchers describe a somewhat similar approach to followership studies. From this perspective, effective followers are "intent

Table 1. Follower types

	High	Participation	
		Passive	Active
Critical Thinking	High	Alienated Followers	Effective Followers
	Low	Sheep	Yes People

Adapted from Robert E. Kelley, "In Praise of Followers," in *Military Leadership: In Pursuit of Excellence*, 3rd ed., ed. Robert L. Taylor and William E. Rosenbach (Boulder, CO: Westview Press, 1996), 137.

on high performance and recognize they share the responsibility for the quality of the relationship they have with their leaders. . . . They know they cannot be fully effective unless they work in partnerships that require both a commitment to high performance and a commitment to develop effective relationships with partners (including their boss) whose collaboration is essential to success in their own work.⁷ This perspective illuminates two ideal follower-competency dimensions—"performance initiative" and "relationship initiative." Within those dimensions are descriptors (or subscales) we could call competencies. They suggest that the ideal follower would act like a partner in the leader-follower relationship.

Performance initiative, a commitment to the highest levels of effort, includes the following:

- *Working (effectively) with others.* Followers balance personal interests with the interests of others and discover a common purpose. They coach, lead, mentor, and collaborate to accomplish the mission.
- *Embracing change.* Followers are committed to constant improvement, reduction of all types of waste, and leading by example. They are change agents.
- *Doing the job (competence).* Followers know what's expected, strive to be the best, and derive satisfaction from applying the highest personal standards. To them, work is integral to life.

- *Seeing one's self as a resource (appreciating one's skills).* Followers understand their value to the organization and care for themselves as assets/investments.

These competencies point to team builders who "lean enthusiastically into the future" and always strive to be the best.

Relationship initiative, which acknowledges that followers share the responsibility with leaders for an effective relationship and work to increase openness and understanding to increase perspective around informed choices, includes the following:

- *Building trust (core values; their word is their bond).* Followers invite honest feedback and share plans and doubts. They are reliable and earn their leader's confidence.
- *Communicating courageously (honest, timely feedback).* Followers tell unpleasant truths to serve the organization. They seek the same from others and risk self-exposure.
- *Identifying with the leader.* Followers are loyal to their "partner in success" and take satisfaction in the leader's success.
- *Adopting the leader's vision (seeing the big picture from the boss's perspective).* Followers know the limits of personal perspective and actively seek others' perspectives for greater team effectiveness. They have a clear understanding of priorities.

Combining this dimension's competencies suggests a follower whose honest integrity earns the leader's confidence. This is a follower (partner) whose loyalty creates an atmosphere wherein the team members share in the leader's success by adopting the organization's vision as their very own.⁸

These dimensions allow us to characterize additional follower types (table 2). The "politician" possesses interpersonal qualities that might be misdirected and underappreciates job performance. "Subordinates" are traditional followers, content to do whatever they are told. They might be disaffected or simply unaware of the possibilities for greater contribution. Lastly, "contributors" are work-

Table 2. More follower types

		High	
		Politician	Partner
		Subordinate	Contributor
Relationship Initiative	Performance Initiative	Low	High

Adapted from Earl H. Potter, William E. Rosenbach, and Thane S. Pittman, "Leading the New Professional," in *Military Leadership: In Pursuit of Excellence*, 3rd ed., ed. Robert L. Taylor and William E. Rosenbach (Boulder, CO: Westview Press, 1996), 149.

horses and often a creative force. However, they could maximize their inputs if they put energy into understanding the boss's perspective, gained through relationship building. It is the "partner" who blends exceptional work performance with perspective gained from healthy relationships to both the leadership and peer group.

If we summarize what these prominent research approaches offer followership studies, we might characterize effective followers in these terms: individuals with high organizational commitment who are able to function well in a change-oriented team environment. Additionally, they are independent, critical thinkers with highly developed integrity and competency. Thus, effective followers exhibit loyalty to the boss by endorsing organizational vision and priorities. A true-life example illuminates these observations and makes the point even more effectively.

In his book *American Generals*, Edgar F. Puryear Jr. interviewed Secretary of State Colin Powell and asked him why he believed he was selected to be chairman of the Joint Chiefs of Staff. Powell replied,

Beats me. I worked very hard. I was very loyal to people who appointed me, people who were under me, and my associates. I developed a reputation as somebody you could trust. I would give you my very, very best. I would always try to do what I thought was right and I let the chips fall

where they might. . . . It didn't really make a difference whether I made general in terms of my self-respect and self-esteem. I just loved being in the army.⁹

So the question becomes, How do we develop such individuals?

The Case for Effective Follower Development

There may well be legitimate disagreements about which follower competencies should have priority over others or which competencies belong more to leader development versus follower development. Nevertheless, it is useful to talk about the prime *mechanism* by which followers learn behaviors or competencies important to their success: mentoring.

Edgar H. Schein discusses the ways that leaders create cultures, including expected behaviors, through six "embedding mechanisms," one of which is "deliberate role modeling, teaching, and coaching." He relates a story that illustrates how to teach desired behaviors by example:

The Jones family brought back a former manager as the CEO [chief executive officer] after several other CEOs had failed. One of the first things he (the former manager) did as the new president (CEO) was to display at a large meeting his own particular method of analyzing the performance of the company and planning its future. He said explicitly to the group: "Now that's an example of the kind of good planning and management I want in this organization." He then ordered his key executives to prepare a long-range planning process in the format in which he had just lectured and gave them a target time to be ready to present their own plans in the new format.

By training his immediate subordinates this way, he taught them his level of expectation or a level of competence for which they could strive. This overt, public mentoring technique—or as Schein would characterize it, "deliberate role modeling, teaching, and coaching"—is key to developing effective followers.¹⁰

Effective leaders acknowledge that their perspective influences their subordinates.

Leader priorities become follower priorities. The leader transmits those items of concern by many means—some directly but others indirectly or according to context. As long as followers clearly understand the leader's expectations and necessary levels of competence, the actual amount of face-to-face time is generally not critical. Of paramount importance is leaders' awareness of how their priorities and actions will set standards for their followers' behaviors and values.

A mentoring culture is necessary to pass on the obvious and subtle values, priorities, behaviors, and traditions in an organization. In another interview in *American Generalship*, Puryear speaks with Gen Bill Creech, credited with revolutionizing the way Tactical Air Command (TAC, forerunner of Air Combat Command) went about its mission when he served as commander from 1978 to 1984. General Creech describes several of the 25 bosses he had during his 35-year career:

Only four of those bosses went out of their way to provide any special mentoring . . . to those of us who worked for them. And far and away the best of those four was General Dave Jones, whom I first worked for when he was the CINC [commander in chief, known today as the regional combatant commander] of the United States Air Forces in Europe (USAFE). . . . He painstakingly taught leadership skills, . . . drawing on his own experiences over the years, and he would take several days in doing so. . . . He provided lots of one-on-one mentoring that helped me greatly both then and over the years. It was those examples that I used as a baseline in setting up the mentoring system in TAC.¹¹

Essentially, General Jones established a mentoring culture within USAFE when his followers emulated what he modeled. Reflecting upon our own experiences, we can conclude that not every member of our Air Force is mentored actively by his or her leaders. We have some evidence of efforts to establish the importance of mentoring, but as of this writing, a visible endorsement of mentoring by uppermost leadership remains in its infancy. Fundamentally, the most important contribution leaders make to their units and the Air Force is to ensure that the mission can continue

without them. Our culture has a tendency to reward individuals who publicly stand in the limelight and to overlook those who do the "heavy lifting" behind the scenes. For that reason, embracing this contribution as the baseline for mentoring and translating it to everyday practice will remain problematic.

In this vein, one of the coauthors of this article tells an interesting story. As a second lieutenant, she encountered great difficulty with her supervisor, a first lieutenant, in aircraft maintenance. Their squadron commander—an "old school TAC" major—called them both into her office one day and conveyed this message: "Ollie, your job is to teach Vicki everything you know. If she fails when you leave the bomb dump, then you've failed. [Rast], your job is to learn. Dismissed!" That 45-second interaction, literally, was the end of that particular "mentoring" session (there would be many others!), but it had profound effects on both young officers in terms of the way they viewed their roles as leaders, followers, teachers, and mentors. Dr. Schein would suggest that this transformation in conceptualizing the leader's role as one of developing followers—in essence, working one's way out of a job—is a prerequisite for mentoring to take root.

Air Force Instruction (AFI) 36-3401, *Air Force Mentoring*, provides guidance to all Air Force members. It specifically charges all supervisors to serve as *formal* mentors to their subordinates. There is room for robust informal mentoring once the culture formally takes root. According to the instruction, "Air Force mentoring covers a wide range of areas, such as career guidance, technical and professional development, leadership, Air Force history and heritage, air and space power doctrine, strategic vision, and contribution to joint warfighting. It also includes knowledge of the ethics of our military and civil service professions and understanding of the Air Force's core values of integrity first, service before self, and excellence in all we do."¹²

In concert with General Creech's observations, AFI 36-3401 states that mentoring is the responsibility of leaders, requiring them—through direct involvement in subordinate

development—to provide their followers with realistic evaluations of their performance and potential and to create goals to realize that potential. Importantly, the instruction *encourages* informal mentors: "The immediate supervisor . . . is designated as the primary mentor. . . . This designation in no way restricts the subordinate's desire to seek additional counseling and professional development advice from other sources or mentors."¹³

Therefore, mentoring relationships are vital to followers who seek to understand the substance behind their leaders' actions. What were the leaders' options? Why do bosses elect to do what they do and when they choose to do it? Asked how one could become a decision maker, Dwight D. Eisenhower responded, "Be around people making decisions. Those officers who achieved the top positions of leadership were around decision-makers, who served as their mentors."¹⁴

Hands-on Follower Development

Let's get more specific. Discussions of *leadership* development tend to focus on acquiring key, separate *competencies* rather than imitating a leader's *style*. We suggest that followers can develop themselves in much the same way.¹⁵ Traditional leader *styles* (e.g., autocratic, bureaucratic, democratic, laissez-faire, etc.) are inadequate in dynamic, changing environments. Can any organization really afford to have a bona fide laissez-faire manager at the helm when the head office or major command mandates an overnight overhaul? Developing leadership *competencies* gives up-and-coming leaders a tool kit from which to draw, no matter the situation they might encounter.

Dr. Daniel Goleman, the leading advocate of emotional intelligence, identifies five categories of personal and social competence: (personal) self-awareness, self-regulation, motivation, (social) empathy, and social skills. Looking more closely into, say, empathy, one finds *specific competencies*: understanding others, developing others, acquiring service orientation, leveraging diversity, and cultivating political awareness.¹⁶ He makes the point that

each of us has areas in which we are more or less naturally competent. Some of us are more empathetic than others (because of early socialization, emotional disposition, etc.) and therefore more proficient in empathy's specific competencies. But the less empathetic individual is not a lost cause because mentoring by senior leaders can enhance areas that need improvement.

If we use our hypothetical but plausible set of *follower competencies* as a template (leaders can adjust the competencies included here to meet their own cultural norms and values), we can extrapolate a *follower-competencies development approach* based on Goleman's discovery work in leader-competencies development. He says that the follower requires behavior modification, monitored by the mentoring leader. Organizations must "help people break old behavioral habits and establish new ones. That not only takes much more time than conventional training programs, it also requires an individualized approach."¹⁷ So which follower competencies need deliberate development?

Plausible Follower Competencies and Components

After examining a variety of research, this article has distilled several follower competencies:

- *Displays loyalty* (shows deep commitment to the organization, adheres to the boss's vision and priorities, disagrees agreeably, aligns personal and organizational goals)
- *Functions well in change-oriented environments* (serves as a change agent, demonstrates agility, moves fluidly between leading and following)
- *Functions well on teams* (collaborates, shares credit, acts responsibly toward others)
- *Thinks independently and critically* (dissents courageously, takes the initiative, practices self-management)
- *Considers integrity of paramount importance* (remains trustworthy, tells the truth,

maintains the highest performance standards, admits mistakes)

Our research leads us to believe that followers learn most effectively by observing the actions (modeled behavior) of an organization's leaders. As Goleman points out, however, impelling adults to adjust their behavior often requires an individualized approach. Whether it's called coaching (skill-specific training) or mentoring (a longer-term relationship), in order for leaders to correct follower-competency deficits, they must pay deliberate attention to development opportunities for each individual.

Tracking progress can occur through both formal and informal feedback. A mentor can ask the follower and his or her peer group how team-dependent things are going. How often is the suggestion box used? Are the suggestions well thought out? (Are they relevant to things on the boss's mind?) One can use customer-satisfaction forms to measure some competencies . . . and the list goes on. Certainly, the most important check is the ongoing evaluation the boss makes throughout the developmental relationship with each follower.

Conclusion

We have explored followership, the one common denominator we all share as members of our culture, by briefly examining plausible competencies germane to effective following. We determined that these competencies should enable followers to become leaders almost effortlessly. By employing Schein's discussion of the establishment of cultures, we made a case for leader involvement in the development of subordinates. Drawing on the followership studies by Kelley and others, we culled follower-specific competencies along the theoretical model of emotional intelligence suggested by Goleman's competencies for leaders. Most importantly for further study, we established the need for Air Force mentoring—the vehicle by which our service can pass on its culture to new generations.

In our look at the specifics for developing better followers, we discovered the existence

of many overlapping requirements between effective leader competencies and dynamic follower competencies. By considering these thoughts about *follower-unique* opportunities to support the mission and by naming *follower-specific* traits and abilities, leaders may now focus on deliberate development plans for

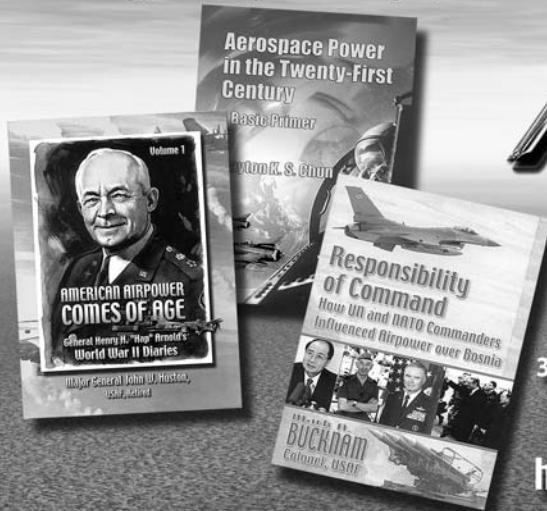
their subordinates. In the future, communication, appreciation, and efficiencies between leaders and followers should vastly improve as complementary and overlapping role requirements are articulated more effectively in terms of a competencies-based development approach for all. □

Notes

1. "Talking Paper on Air Force Military Retention," <http://www.afpc.randolph.af.mil/afretention/RetentionInformation/Pages/General.asp> (accessed 4 March 2003).
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15. See Daniel Goleman, *Working with Emotional Intelligence* (New York: Bantam Books, 1998).
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Net Assessment



Strategic Air Power in Desert Storm by John Andreas Olsen. Frank Cass (<http://www.frankcass.com>), Taylor & Francis Group, 11 New Fetter Lane, London, EC4P 4EE, United Kingdom, 2003, 256 pages, \$36.95 (softcover).

The debate as to whether offensive air power armed with conventional weapons can, independently of land or maritime operations, achieve strategic effect is as old as the application of air power itself. The first phase of the debate started with the creation of the Royal Air Force's Independent Force in 1918 and culminated in the arguments about the effectiveness of the combined bomber offensive against Germany and the strategic bombing offensive against Japan in World War II. For the next 45 years of the Cold War, *strategic* was synonymous with *nuclear*. However, all this was to change in the autumn of 1990 with the Iraqi invasion of Kuwait and the subsequent Operation Desert Storm in early 1991 to restore Kuwaiti sovereignty. Whilst a number of books have been written on the use of air power in Desert Storm, not the least being the authoritative *Gulf War Air Power Survey*, all have concentrated on the war or the air campaign as a whole. In addition, all characterised the strategic air campaign as being against the leadership, power generation, fuel and lubricants production, transportation infrastructure, and target sets of the Iraqi Integrated Air Defense System. What is different about John Olsen's treatment of the subject is that he concentrates only on the genuinely strategic aspects of the air campaign—that is, those attacks that tended to induce "strategic

paralysis" on the regime and, to a lesser extent, on the counter-Scud operations.

In chapter 1, Olsen looks at the political and air power doctrinal background, explaining the primacy of the air/land doctrine within the US tactical air forces. Chapter 2, "The Genesis of the Strategic Air Campaign Plan," is also, to some extent, a scene-setter as it covers the philosophical differences between the standpoints of the author of the Instant Thunder plan, Col John A. Warden, who saw air power as providing a war-winning and indeed regime-toppling capability, and those of Gen H. Norman Schwarzkopf, who in August 1990 only wanted a retaliatory option, and his air component commander, Gen Charles A. Horner, who saw the forthcoming air war primarily in terms of providing support to the inevitable land battle. Chapter 3 covers the evolution of the strategic air campaign plan, from the production of the Instant Thunder plan in August 1990 through its evolution into phase one of a much broader campaign plan that was finally executed the following year. Olsen also addresses the problems that the Checkmate team had selling their plan both to the theatre commanders and within Washington, and why in the end only a couple of Checkmate staff members, not including Colonel Warden, remained in Riyadh to contribute to the in-theatre planning and execution of the final campaign. As a necessary precursor to chapter 5, which examines the effectiveness of the strategic air campaign itself, chapter 4 is a detailed analysis of the Iraqi regime's political power structure. In his analysis of the strategic air campaign itself, Olsen concludes that whilst attacks on leadership and command and control amounted to only 2.4 percent of the overall effort, and those on Scuds to a further 4.2 percent, "the strategic air campaign, in conclusion, contributed strongly in rendering the Iraqi leadership largely ineffective as a strategic entity." He also makes the point that overthrowing the Iraqi regime was not a coalition aim, although one that was certainly in the minds of the Checkmate team when they planned Instant Thunder. His conclusions reiterate the preceding point but suggest that, more importantly, the development of the Instant Thunder campaign plan by the Checkmate team marked a radical shift in air power doctrinal thinking away from the air/land

battle of the central region of NATO to a broader understanding of the potential of air power in post-Cold War expeditionary conflicts.

Olsen's book is both well written and very readable, in particular in his treatment of personal and organizational dynamics. The book also provides, although somewhat implicitly, a good analysis of what has now come to be regarded as the doctrine of "effects-based operations," particularly in his treatment of the political and psychological aspects of coercive operations at the strategic level. This book, therefore, is highly recommended for those interested in gaining a deeper understanding into both the concepts and practicalities of using conventional air power to achieve strategic coercion; it would be an interesting exercise to apply Olsen's methodology to the 2003 Iraq conflict.

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Tedder: Quietly in Command by Vincent Orange. Frank Cass Publishers (<http://www.frankcass.com>), Taylor & Francis Group, 11 New Fetter Lane, London, EC4P 4EE, United Kingdom, 2004, 480 pages, \$55.00 (hardcover).

As Eisenhower's deputy and air commander during the liberation of Europe between 1943 and 1945, and as air officer commanding (AOC) Middle East from 1941 to 1943, Marshal of the Royal Air Force Lord Tedder fully earned his reputation as one of the outstanding Allied high commanders of the Second World War. Although an early biography by Roderick Owen was published in 1952, and Tedder's memoirs, *With Prejudice* appeared in 1966, there has long been a need for an updated biography drawing on archival sources released since the 1960s and on the enormous volume of research and writing about the war undertaken since that time. Vincent Orange's eagerly awaited study—*Tedder: Quietly in Command*—will therefore be welcomed throughout the military-history community, particularly by students of air power history.

Arthur Tedder was born in 1890 and was educated at Whitgift School and Cambridge University, where he read history. He was commissioned into the Dorsetshire Regiment in 1915 and joined the Royal Flying Corps in the following year. He was appointed squadron leader in the Royal Air Force (RAF) in 1919 and then rose steadily through the ranks during the 1920s and early 1930s to reach air commodore in 1934, when he became the Air Ministry's director of training at the begin-

ning of the first of the pre-Second World War RAF expansion programmes. In 1936 he became AOC Far East, based in Singapore; he was promoted to air vice-marshal in 1937 and returned to the Air Ministry in 1938 to become director general of research and development, during which time he helped to initiate such war-winning aircraft as the de Havilland Mosquito and actively promoted the development and production of Sir Frank Whittle's jet engine. After some difficult months under William Maxwell Aitken, Lord Beaverbrook, in the Ministry of Aircraft Production, he was promoted to the acting rank of air marshal and sent to the Middle East as deputy AOC in November 1940; he was then appointed AOC in June 1941.

Although tipped as a future chief of the Air Staff in the mid-1930s, it was to be in the desert war between 1941 and 1943 that Tedder first proved his exceptional qualities as a high commander. Assuming his appointment under immensely difficult operational circumstances, with scarce resources and under constant criticism from the other armed services, Tedder transformed the RAF in the Middle East into a formidable fighting machine—flexible, highly mobile, and capable of winning and maintaining control of the air, as well as of providing ample support to land and maritime forces. Indeed, he proved a master of the joint environment, ultimately winning the backing of his army and navy counterparts to uphold the fundamental principle of centralised command and control of air assets. Under Eisenhower, first as deputy supreme Allied commander Mediterranean and then as deputy supreme commander Allied Expeditionary Force (in North-West Europe), Tedder would subsequently display a no less exceptional ability to operate in a coalition environment. Indeed, Orange shows that Tedder was in many ways the linchpin of the Allied high command in Europe between 1943 and 1945. The importance of his role in integrating Allied air power into Operation Overlord and in resolving interservice tensions and strained relations within the alliance (which became acute late in 1944) can hardly be exaggerated.

Tedder was promoted to air chief marshal in 1942 and became a Marshal of the Royal Air Force in September 1945. In January 1946, he succeeded Charles Frederick Algernon, 1st Viscount Portal of Hungerford, as chief of the Air Staff and afterwards, in conditions of desperate economic stringency, presided not only over the postwar contraction of the wartime RAF, but also over the beginning of its adaptation to the demands of the Cold War. After his retirement in December 1949, he became a

governor of the British Broadcasting Corporation, chancellor of Cambridge University, and chairman of the Standard Motor Company. He died in 1967.

In this very important and highly readable biography, Vincent Orange set himself the difficult task of portraying Tedder the *man*—childhood, character, and private life—as well as Tedder the *commander*. But the result is an eminently balanced narrative which succeeds in its principal objective. It was clearly *not* the author's intention to upset this balance by embarking on a particularly detailed analysis of the command techniques and processes that lay behind Tedder's remarkable accomplishments. For the most part, the reader is left to draw conclusions about how and why Tedder achieved what he did. This book nevertheless adds much to our understanding of the British and Allied high commands in the Second World War, of relations between Allied high commanders, and of the top-level direction of operations, particularly in the desert and broader Mediterranean theatres. The lessons that it contains on joint and coalition warfare remain supremely relevant to today's commanders.

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Surprise, Security, and the American Experience

by John Lewis Gaddis. Harvard University Press (<http://www.hup.harvard.edu>), 79 Garden Street, Cambridge, Massachusetts 02138, 2004, 160 pages, \$18.95 (hardcover).

I wish to make three points about *Surprise, Security, and the American Experience*. First, it is well written and thought provoking. The book fits neatly into a jacket pocket, and one can easily devour it on a flight from, say, Washington, DC, to Los Angeles. Second, it introduces a framework for US security policy that, as asserted by the author, emerged in the wake of the first attack on our homeland in 1814 when the British attacked Washington, setting fire to the White House and Capitol. This framework—preemption, unilateralism, and hegemony—persists today. Understanding it is instructive because Gaddis intends the framework to be both descriptive and predictive, using events following the third assault on our homeland—the unchallenged air attacks on the World Trade Center and Pentagon—to prove its validity. Third, historians—particularly those persuaded by the politics of the Democratic Party—likely will assert that the evidence cited by the author does not support his conclusions.

Let's examine the framework before judging the book. Gaddis's thesis is that "deep roots do not easily disappear" and that America's roots are well established (p. 38). When confronted with rude surprises or unexpected threats to national security—the aforementioned attack of 1814 and the Japanese raid on Pearl Harbor in 1941, the second attack on the homeland—historically, we have expanded rather than retracted our response. In our deep roots reside the historical responses of pre-emption, unilateralism, and hegemony.

After 1814 preemption took the form of expansion into the territory of derelict or failed states, nonstates (pirates and tribes), and states that might fail. Unilateralism followed the precept that the United States cannot rely on the goodwill of others. Our history, as Gaddis deftly shows, does not reflect a tendency toward *isolationism* but an avoidance of *entanglements*—those complications that partners can bring to a mix. Hegemony first took the form of continental (less Canada and all of Mexico) sovereignty; then slavery; then no slavery; and then the expansion into nonwhite territories to restore the economic advantages of slavery.

Given these roots, Gaddis asserts that the president did nothing new after the events of 11 September 2001; instead, he returned to a set of behaviors that emerged after the attack on Washington in 1814, perhaps without learning all that he could have gleaned from President Franklin Roosevelt's strategic maneuvers, occasioned by the collapse of homeland security in 1941. The genius of Roosevelt, on the one hand, lay in his reasonableness—that "proclaimed interests should not exceed actual capabilities"—and, on the other, in his ability to gain hegemony by *apparently* rejecting preemption and unilateralism (p. 58). The grand strategic maneuvers embodied in the Marshall Plan and containment stayed the course that Roosevelt set and prevented dangerous excursions into nuclear-armed preemption. (Gaddis would be pleased to learn about Project Control—Air University's little known sortie into thinking about preventive nuclear war, initiated in 1953. It eventually led to the resignation of the Air University commander.)

The 1814 and 1941 attacks on our homeland saw us dealing "with an identifiable regime led by identifiable leaders operating by identifiable means from an identifiable piece of territory," but the 2001 attack was different (pp. 69–70). According to the author, the Clinton administration might have seen it coming. That administration sought engagement rather than the spread of democracy and missed the effects that a revolution in global

transportation had on our security by diminishing one of our most important strategic assets: geographical separation from threats.

Gaddis suspects that the Bush administration's difficulty in preserving consent for its antiterror campaigns is that it brings a nineteenth-century American vision—preemption and unilateralism—to an early twenty-first century that still appreciates Roosevelt's multilateralism and self-restraint. Even so, the author seems to stand at a higher place than do most of us and, at least when the book appeared, sees a rosier future than we do. This point may be significant. The date that one *reviews* a published book can have just as much importance as the date that one *publishes* it. Martin L. van Creveld, for example, lamented that his book *The Transformation of War* was released just as the first untransformed, conventional war with Iraq began. Prepublication reviewers had a less advantageous position than did those who assessed the book shortly after its publication. Similarly, the people who reviewed *Surprise, Security, and the American Experience* in the euphoric wake of Operation Iraqi Freedom's early successes likely reached different judgments than did the ones who stand hip-deep in the present election year.

Thus, one cannot help being puzzled to read

that the United States would then nonetheless, with the help of Great Britain, go ahead and attack Iraq anyway, in the face of the direst warnings about the risks of military resistance, the use of weapons of mass destruction, the eruption of outrage in the Arab world, a new outbreak of terrorism, a huge increase in the price of oil, and astronomical estimates of the human and material costs of the operation—only to have none of these things happen.

. . . Finally, that much of the rest of the world would find itself amazed . . . over one of the most surprising transformations of an underrated national leader since Prince Hal became Henry V. (pp. 81–82)

None seems a word that we should caution ourselves about using, even if we cannot avoid using *transformation*. When the early reviews of *Surprise, Security, and the American Experience* appeared, many individuals in the United States and elsewhere believed that "mission accomplished" was authoritative if not true, that Iraqi insurgents had not yet used sarin against our troops, that most Arabs did not revile us, that Spain remained in the coalition, that gas wasn't two dollars a gallon, that the price of oil wasn't increasing as production controlled by the Organization of Petroleum Exporting Countries went down, that Abu Ghraib was just a prison, that Fallujah was just a

city, and that Gen Eric Shinseki's prescient estimate of the troops required to subdue a postwar Iraq may have been too high. Things change.

So why the author's optimism? A valued, well-educated, and well-traveled academic as well as a fellow of the Hoover Institution from 2000 to 2002 (a designation that includes Richard Allen, Newt Gingrich, Edwin Meese, George Shultz, and Condoleezza Rice, now on leave), Gaddis remains a respected scholar of Cold War history. Appreciating the risk, he published *Surprise, Security, and the American Experience* while the jury of time—the triers of fact—was still empanelled. The framework may perform admirably, and history and time may well prove our ability to escape the strategic situation in which we find ourselves. As the author confesses, "It is . . . presumptuous to speculate about those consequences so soon after the event [9/11], but it's also necessary. For although the accuracy of historical writing diminishes as it approaches the present—because perspectives are shorter and there are fewer sources to work with than in treatments of the more distant past—the relevance of such writing increases" (p. 5, emphasis in original).

My judgment of this book? It is, to paraphrase the author, relevant.

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The Iraq War: A Military History by Williamson Murray and Maj Gen Robert H. Scales Jr. Belknap Press of Harvard University Press (<http://www.hup.harvard.edu>), 79 Garden Street, Cambridge, Massachusetts 02138, 2003, 368 pages, \$25.95 (hardcover).

The Iraq War hit the streets while many of the coalition troops who fought the war were still overseas, patrolling the streets of Baghdad and Basra. A well-documented book including color photos and maps, it provides analysis of the major combat phases of Operation Iraqi Freedom, the short but successful battle against the armies of Iraqi dictator Saddam Hussein in 2003. Although the study stands as a worthwhile contribution to the field of military history, it is important to examine the book critically in the context of the continuing global war on terrorism.

Initially, I regarded *The Iraq War*'s "lessons learned," written 3,000 miles removed from a battlefield still warm, with some skepticism. I paused several times at unsupported assertions or editorializing that seemed to go beyond historical reporting. But

this “quick look” at the war has some merit. Noted author John Lewis Gaddis describes its value well when he writes that it is “presumptuous to speculate . . . so soon after the event, but it’s also necessary. For although the *accuracy* of historical writing diminishes as it approaches the present—because perspectives are shorter and there are fewer sources to work with than in treatments of the more distant past—the *relevance* of such writing increases” (*Surprise, Security, and the American Experience* [Cambridge: Harvard University Press, 2004], p. 5) (emphasis in original).

The authors bring credibility to *The Iraq War*. Well known in military-history circles, Williamson Murray is a professor at the Army War College. An extensively published historian trained at Yale, he wrote a significant portion of the *Gulf War Air Power Survey* (Washington, DC: Department of the Air Force, 1993) over a decade ago. General Scales, formerly commandant of the Army War College and now retired, headed the US Army’s Desert Storm Study Project and authored *Certain Victory: The United States Army in the Gulf War* (Washington, DC: Brassey’s, Inc., 1994), the official US Army account of its performance in the Gulf War, originally published by the Office of the Chief of Staff, US Army, 1993. He too is well published and appears frequently on the academic and lecture circuits in Washington, DC.

Among the first of many analyses of Iraqi Freedom, this book provides a strong recounting of what one war fighter I know calls the “major muscle movements” of the battle. However, it is not a comprehensive examination of an integrated joint coalition campaign, and it is not in the same league as the *Gulf War Air Power Survey*, researched by a dedicated analytical team and published in several volumes about a year after Operation Desert Storm—the first Gulf War. In fact, perhaps a more accurate subtitle for *The Iraq War* might have been *A Soldier’s Perspective* instead of *A Military History*.

In the prologue, devoted to Desert Storm, the authors assert that the “aerial assault was an exercise in overkill and lasted far too long” (p. 13)—an interesting suggestion for which they provide no evidence. Such a statement illustrates the book’s greatest failing: lack of depth and balance regarding joint air and space power. Indeed, the analysis seems very two-dimensional and “surface-centric.”

As readers move forward to the 2003 conflict in Iraq, they will find that the analysis of the joint air component’s planning and execution is thin. According to Murray and Scales, “For all the talk of effects-based operations [EBO] and operational

net assessment, the failure to understand the enemy where he lives—his culture, his values, his political system—quickly leads up a dark path where any assumption will do” (pp. 182–83). The authors do not seem to weigh Iraqi Freedom as a battle in the greater war on terror or credit the coalition campaign in Iraq with involving allies, several US government agencies other than the Defense Department and, effectively, all of our instruments of national power. They miss an opportunity to delve into the interesting and extensive red teaming and war gaming conducted by US Central Command, by the Air Staff’s Checkmate directorate, by the Air Force Studies and Analyses Agency, and by the US Navy and Army—among others—between 1991 and 2004.

The Iraq War also overlooks some tremendous advancements made in warfare since Desert Storm: the progression of air and space power theory, the promulgation of EBO doctrine to the joint community, the rise of new space organizations and capabilities, huge improvements in communications and command and control (C2), and improved mastery of the operational level of war at the combined air and space operations center. The authors do mention C2 and upgrades to unmanned aerial vehicles, but they pigeonhole them to some extent as air-component improvements rather than assess their effect on the support of surface warriors.

For the Airman or joint officer who studies this book, the lessons learned, outlined in the “Air Campaign” chapter, testify to some of the common misperceptions about air and space power. Murray and Scales correctly describe the C2 capabilities used by the coalition to tie together sensors and shooters as “particularly impressive” (p. 182), acknowledge the devastating psychological effect of airpower on Iraqi combatants (p. 180), and characterize the coalition’s limited human-intelligence capability in Iraq as a shortcoming. Certainly, those opinions and observations are balanced and defensible. Unfortunately, by emphasizing isolated details, taken out of context, the authors tend to miss the larger strategic picture (and virtually everything in modern warfare is strategic).

One particular assertion, based on a false assumption, may proceed from a lack of detailed information—understandably difficult to come by a scant few weeks after the war. Specifically, Murray and Scales write that “there is considerable irony here, because most military theorists of the 1920s and 1930s posited that air power was a weapon that should attack exclusively the morale of the enemy” (p. 179). That statement, of course, is not exactly

true. Giulio Douhet's vision of huge formations of bombers crushing cities (and even using chemical weapons) to create terror and defeat the enemy's morale peaked with Billy Mitchell—and largely faded with him. The rationale was that causing numerous casualties up front would curb the number of deaths in the long run by forcing the adversary to back down. Flaws with Douhet lie in the laws of war, in the moral repugnance toward the idea of killing innocents intentionally, and in anticipating the weakness of a populace under aerial siege. The resolve of the British during the zeppelin raids of World War I and then again during the Battle of Britain serves as an example. US Army Air Corps strategists were watching and learning.

By the 1930s the Air Corps Tactical School, located at Maxwell Field, Alabama, began promulgating strategic bombardment and the industrial-web theory, thus presenting a more nuanced vision of airpower. Daylight precision bombardment became the goal, but the lack of adequate technology made such doctrine difficult and costly to execute effectively, resulting in the firebombing and destruction of cities even though the aiming points for most US bombardment missions in World War II were military or dual-use targets. Obviously, by today's standards the collateral damage may have been unacceptable, but Ploesti and Operation Overlord serve as good examples of industrial-target sets designed to stall military operations—not just kill civilians, as some assert. Others might disagree with US nuclear motives, citing escalation in the Pacific theater, firebombing raids, and nuclear-bomb attacks, but even then, the mass killing of civilians was not the goal of the Army Air Corps—and never has been the Air Force's goal, even in the Cold War.

EBO, criticized by the authors, is now a widely embraced joint operational concept. Finally, modern technologies allow joint air and space power to realize the dream of the early Air Corps theorists. Planners apply information-age strategies and strenuously attempt to minimize direct civilian casualties. We even attempt to minimize *inconveniences* for civilians as we try to achieve specific effects that link directly to strategic objectives. There is no "considerable irony," as the authors suggest, that the coalition did not flatten Baghdad or kill powerless people in a futile attempt to coerce a tyrant (p. 179). Although the US military may need to reorganize in the area of postwar planning, campaign planners deliberately selected or spared targets during Iraqi Freedom to set the conditions to win the peace following major combat. An ethical

military culture has created a philosophy that exploits precision capabilities and takes advantage of technological and organizational improvements, as well as the revolution in military affairs, to reduce the need for brute force and avoid long-term devastation. This stance is intrinsically linked to postconflict planning.

The authors also fail to address the fact that our joint air and space capabilities—particularly speed, power, and precision—have redefined mass, a historic principle of warfare, while retaining the moral high ground. We don't always need tens of thousands of troops to take an airfield, fort, or village; in fact, air and space power, assisted by special forces, was certainly effective in Afghanistan and western Iraq. Airpower planners realize—and smart joint officers recognize—that although technology will never make war antiseptic, collateral damage can and should be reduced as much as practical.

Overall, *The Iraq War* is worth reading. Although well-read Airmen may be troubled by several points, the book is thought provoking and provides a solid background of surface-force movements in Iraqi Freedom—hopefully the last large ground campaign we'll see for a few years. The authors' remark about the implications of the Iraq war deserves one final comment: "Cultural and geopolitical complexities will make the securing of Iraq far more of a challenge than virtually anyone had foreseen before the conflict began" (p. 254). If they believe that the "securing of Iraq" began in 1990, I might agree. If they refer only to the major combat operation that began in 2003, I have to say, "Absolutely not true." I don't know of any planner of any rank—joint, interagency, and air—who said that capturing Saddam and fixing Iraq would be easy. Without a doubt, joint and air planners considered many scenarios that are worse than the reality we face today. Perhaps the latest war in Iraq provides a lesson to planners at all levels that the "best case" might present significantly different challenges than the "worst case" we usually anticipate.

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Airpower Advantage: Planning the Gulf War Air Campaign, 1989–1991 by Diane T. Putney. Air Force History and Museums Program (<http://www.airforcehistory.hq.af.mil/publications.htm>), 200 McChord Street, Box 94, Bolling AFB, Washington, DC 20332-1111, 2004, 481 pages (softcover).

I have read most of the literature on the planning of the Gulf War air campaign (GWAC). Relative to other documents on the subject, Diane Putney's *Airpower Advantage* is the most accurate, complete, and unbiased account available to date. A lucid writer and meticulous researcher, the author substantiates her statements with references to firsthand documentation of critical events. The book uniquely ties together the key decisions and briefings that occurred in Saudi Arabia; Tampa, Florida; Washington, DC; and locations around the Southwest Asia theater. Although Putney wrote this account shortly after the Gulf War, it has taken 10 years to declassify the text, gain publication-release authority, and make available the book's critical insights.

The author provides a tutorial on how planning a major theater war unfolds and discusses its key elements: limiting factors, logistical concerns and requirements, command relationships, and the importance of personalities—specifically, the role of leadership in putting together an executable plan from disparate pieces. Readers gain complete and accurate understanding not only of the design and development of the GWAC, but also of the combatant commander's creation of his overall campaign plan and the integration of service components. Unlike some of the more myopic accounts of Operation Desert Storm, this book merges a number of viewpoints into a balanced, coherent whole, thus lending insight into the variety of planning elements, perspectives, and inputs that other books have either missed or avoided. It is also the first study to capture the importance of the effects-based planning approach used to design the GWAC.

One finds here a wealth of perspectives and case studies that can assist future planners. For example, with respect to the role of the joint force air component commander (JFACC) as area air defense commander, Putney summarizes Gen Charles A. Horner's action as follows: "Grafting onto the host nation's organization precluded other [US Central Command] components from establishing their own area air defense system," that would have inhibited the development of an integrated and effective theaterwide system (p. 108). Putney also allows readers to examine the effective style employed by General Horner as he worked with other services to meet objectives (p. 114). Chapters 6 and 9 offer Desert Storm case studies of the failure of intelligence institutions and architectures to adapt to the demands of precision warfare and effects-based assessment. Unwavering adherence to an established intelligence process, regardless of the demands of the situation, hampered bomb damage assessment

and rendered intelligence support of the overall effort less than optimal. At the same time, we learn how the integration of intelligence and operations might enhance their efforts.

In addition to addressing the influence of different players, the author accurately captures the magnitude of the tasks that General Horner, as JFACC, adroitly wove into a cohesive air campaign. Such insights validate the utility of a JFACC, an organizational construct first employed in Desert Storm. From General Horner's example we learn that a great commander does not micromanage but leads best by providing operational-level guidance.

The real-world evidence found in this book—especially the challenges and elements involved in designing a campaign plan—will prove invaluable to the professional military education and training of our country's future leaders. For that reason, I almost wish Putney had given it a different title because the insights found therein do not limit themselves to airpower but address the concerns of all leaders and planners in each of our military services. Clearly, *Airpower Advantage* merits inclusion in the required reading lists of anyone with an interest in campaign planning.

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The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks upon the United States (official government edition). US Government Printing Office (<http://www.gpoaccess.gov/index.html>), 732 N. Capitol Street, NW, Washington, DC 20401, 2004, 588 pages, \$8.50 (softcover). <http://www.9-11commission.gov/report/911Report.pdf>.

The stakes in the war on terrorism are very high—nothing less than our nation and way of life. The National Commission on Terrorist Attacks upon the United States was charged not only with analyzing one of the most horrendous events ever to occur on American soil and the dire threat it represents to our nation, but also with making recommendations to prevent a recurrence. This review of the commission's report, however, may generate more questions than answers.

In terms of readability, some of the report's chapters resemble a dry intelligence estimate, others an engaging political history such as Barbara Tuchman's *The Guns of August*, and still others a painful PowerPoint briefing. The writing, vetting, publishing, and distributing of the report proved

atypical for a US government publication. Certainly not a transparent process, the writing and publishing proceeded under a curtain of secrecy; nevertheless, many of the interviews conducted by the commission turned into public show-trials, and a number of commission members regularly appeared on television, voicing some blatantly partisan agendas. A dense tome of nearly 600 pages, the text appeared on the Internet and was available for public purchase even before most Pentagon personnel received copies. Furthermore, the composition of the commission—an unusual mix of senior statesmen, partisan politicians, and serious scholars—and the influence of its staff were extraordinary and controversial. Bizarrely, some members behaved (and still act) like celebrities on tour—appearing on the lecture circuit, television, and the Web; promoting their own books; and lobbying for their positions (even during the commission's interview process). Overall, the commission and its report took the form of a hybrid mix of politics and policy, research and drama. In the end, it recommended a vector similar to one that the US government is already pursuing, with some structural changes in the bureaucracy.

A strength of the report is its great detail concerning the execution of the attacks (pp. xv–46 and 145–324). Readers will find the chapter "Terrorist Entrepreneurs" especially provocative; take, for example, its description of Khalid Sheikh Mohammed (KSM): "Highly educated and equally comfortable in a government office or a terrorist safehouse, KSM applied his imagination, technical aptitude, and managerial skills to hatching and planning an extraordinary array of terrorist schemes" (p. 145). Perfectly capable of leading a normal, productive life, this particularly twisted murderer instead made a conscious decision to kill innocents in cold blood. Such psychoanalysis of the terrorists is mildly interesting but should be more chilling—rather than apply their energies to helping their people build a better life, terrorists prefer to destroy and kill. Fortunately, the 9/11 report points out that Islamist terrorism is "the catastrophic threat" (p. 362), representing a way of thinking that completely opposes American values and Western civilization. It also validates the assertion that we must vigorously guard against mirror imaging in war planning and homeland defense.

The report's explanation of terrorist motivations, however, suffers from the lack of any regional, political, and religious history that underlies the terrorist threat. Without a sense of continuity, the full texture of the terrorist psyche and their

malevolent Weltanschauung (worldview) becomes simplified and homogenized. A better study would include a historical review, perhaps beginning with early Middle Eastern history and the emergence of Muhammad. Certainly it should have included a summary reaching back to the region's colonial past.

Following an opening chapter on the details of the 9/11 hijackings, chapter 2, "The Foundation of the New Terrorism" (pp. 47–70), recounts the ascendancy of Osama bin Laden. Disappointingly, the authors never really tell us about "old terrorism," part of that missing history. One might argue that the genesis of modern Islamic extremist violence extends from the fall of the Ottoman Empire, when the Levant, North Africa, the Arabian Peninsula, and Iran enjoyed an abundance of both culture—Muslim, Jewish, Zoroastrian, and Christian—and science. Extremists use the Crusades, which occurred a millennium ago, as an excuse for modern Islamic violence. Another common, though illogical and naïve, excuse for terrorism is poverty. But we have always had both poor and rich, and most of the 9/11 terrorists, including Osama, were middle class, fairly intelligent, and educated—certainly capable of contributing to society in meaningful, productive ways. Yet, they chose mass murder. Why?

Indisputably, after the British redrew the maps, after the balance of power changed in the region with the creation of the new state of Israel in 1948, and after decades of Cold War politics, coexistence in the region gave way to the embracing of radicals. Islamic extremists, including those who assassinated Egyptian president Anwar Sadat and those violently crushed by King Hussein I of Jordan and Pres. Hafiz al-Assad of Syria, among others, fostered rabid hatred of Israel and then of the United States. As fourth world countries gained access to the wide distribution of images and signals, media began to play a growing part in the promulgation of hate, expanding it to encompass all of Western civilization (except, of course, for technologies useful in keeping the region's powerful strongmen comfortable and secure) (pp. 47–55). There is a long history of states supporting terrorism in the region, particularly since the 1980s: Iraq and Saudi Arabia have done so with "charity" telethons and donations to the families of suicide bombers in Israel; Saddam Hussein gave refuge to terrorists such as Abu Nidal; mullahs in Iran supported Hamas and other terror groups who regularly attacked Americans and Israelis; Syria used Lebanon as a base of operations; and Libya trained terrorists and destroyed American aircraft in international airspace. By the beginning of the twenty-

first century, easily accessible media had become integral to the tacit acceptance of terrorists as part of Middle Eastern Islamic society. Even today, the United Nations and many European capitals fail to condemn terrorism with any sort of consistency, seeking instead to find moral equivalence between murder and self-defense where none exists.

Because the report does not fully consider the huge impact of the Information Age, a temporal perspective can prove helpful in examining this gap critically. We know that slaughtering or enslaving the inhabitants of a town was not an unusual practice in the classical world. Rumors of brutality increased the cache of despots, augmenting their income through the collection of protection money and taxes. The war on terrorism differs significantly from previous conflicts with respect to this tradition of violence and aggrandizement, in no small part because of today's obsequious media. Obvious to all who watched, 9/11 became a media event—precisely the effect desired by the terrorist leadership, who sought not only to commit murder, but also to create mass panic and hysteria, culminating in the cracking of the Western world. Clearly, the media has become an essential and willing tool of the terrorists.

In the past, the media did not push live pictures of battlefield action into every American's home, let alone hundreds of millions of homes around the world. Beginning with Vietnam, a pervasive media gained power. By 2001 we learned it had the ability to rivet helpless onlookers with images of planes crashing into the World Trade Center or, by 2004, to do so with footage of terrorists gruesomely beheading innocent civilian captives. Of course, it is easier to find this type of coverage in open societies such as the United States, Israel, or Spain. Atrocities that occur in dictatorships (e.g., Saddam's Iraq or present-day North Korea) generate little fanfare or international reaction because the images are not as available to the wired West or to repressed populaces. As Eric Larson notes in his RAND study entitled *Casualties and Consensus*, the influence of the media, including the Internet, on policy—especially in the West—has made it a critical variable that terrorists understand and that counterterrorists need to understand quickly (pp. 99–103).

Without having actually experienced the 9/11 media barrage and without an appreciation of the greater context of the commission's report, future historians will certainly interpret it differently than those of us who lived through these events. Their perspective of the polarization and controversies will be less acute than ours, and their understanding

of the political dynamics and the complex strategic environment will be narrower. Our proximity to 9/11 makes the dense subject matter susceptible to individual interpretation. So why read this report? Rather than relying on an executive summary or, worse, media "experts," we should read it because, in the words of Yale professor John Lewis Gaddis, "It is . . . presumptuous to speculate about those consequences so soon after the event, but it's also necessary. For although the *accuracy* of historical writing diminishes as it approaches the present—because perspectives are shorter and there are fewer sources to work with than in treatments of the more distant past—the *relevance* of such writing increases" (*Surprise, Security, and the American Experience*, p. 5, emphasis in original).

Unique but not authoritative (I would have titled it *A 9/11 Case Study*), the 9/11 report stands as a piece of living history with which members of our armed forces, defense community, and citizenry at large must become familiar. Readers should analyze it critically, augmenting it with other sources to obtain a more complete picture of our dynamic international-security environment. Regardless of whether or not one considers the report legitimate, it will take years for the controversies to subside and for the facts to rise slowly to the top. Without the proper context and background, the information presented as fact and the recommendations presented as essential are insufficient to guide America's defense policy and international affairs. But don't trust me, and don't trust "experts"—read the report yourself.

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C3: Nuclear Command, Control Cooperation by Valery E. Yarynich. Center for Defense Information (<http://www.cdi.org/index.cfm>), 1779 Massachusetts Avenue NW, Washington, DC 20036-2109, June 2003, 291 pages, \$35.00.

C3 examines how the United States and Russia control their nuclear weapons and what steps exist for managing nuclear deterrence. Bruce Blair—author of the book's preface, president of the Center for Defense Information, and a nuclear strategist in his own right—asserts that the form of Russian negative control is more stable than the American system of permission, action, links, and codes. Since the end of the Cold War in 1989, numerous questions have arisen as to the reliability of the Soviet command, control, and communica-

tions (C3) infrastructure. Author Valery Yarynich, who served in the Soviet Strategic Rocket Forces and then advised members of the Russian Duma on defense matters, is a well-known figure on the American academic-lecture circuit. In *C3* he describes the workings of Soviet nuclear command and control, from its origins in the intermediate missile force in the 1950s to its maturity in the 1970s.

Operating under the principle of launch-on-warning, the Russian command system is poised to obtain authority for the release of nuclear weapons within 10 minutes from the president, defense minister, or chief of the General Staff. Physical control of the unlock-and-launch authorization codes resides with the military, but the General Staff has direct access to them and can initiate a missile attack with or without the permission of political authorities.

The General Staff has two methods for launching. Following the American pattern, the unlock-and-launch authorization codes held by the General Staff at its command bunkers can be sent directly to individual weapons commanders, who would execute their launch procedures. Alternatively, the General Staff could direct missile launches directly from command bunkers in the vicinity of Moscow or from other sites. This remote launch of land-based ICBMs would bypass the subordinate chain of command and missile-launch crews. The early-warning system uses Kazbek, an automated process consisting of cables, radio signals, satellites, and relays that make up the heart of Russian command and control. Tied to this automated electronic web are the three nuclear suitcases or Chegets. Once activated, these systems can start a countdown to launch nuclear weapons in the event the entire Moscow command structure is destroyed. Furthermore, an automatic feature exists for raising the nuclear force-readiness level; strategic aviation as well as naval units are tied into the General Staff network. The book also addresses how the USSR incorporated mobile SS-25 and SS-27 units as well as ballistic-missile submarines, which represented new challenges to C3 systems. Mobile ICBMs posed their own problems since they could not be constantly field-exercised to prevent excessive wear and tear.

American readers will be struck by how some defense relationships remain the same in every country and regime. For example, Yarynich details how defense contractors influenced Soviet thinking about C3 and technology, fostered close ties to individual components, and laid the foundation for decades of work. Research institutes, design bureaus, and factories establish close relationships,

just as they do in the United States. This type of information sheds light on the similarity of Cold War developments in both the United States and USSR.

The text does have a few shortcomings. Yarynich provides no information about permissive action links (PAL) in the Soviet Union, and Russian weapons-release procedures are not explained in the same detail as those in the United States, which has more open literature on its nuclear structure and practices. Nevertheless, *C3* is required reading for strategic nuclear analysts and Soviet-era historians. Modern national-security and military analysts will find it useful for its contribution to understanding how other countries could develop nuclear-weapons safeguards. Although its conclusions about American systems may seem unusually harsh, the book will prove helpful to specialists in both the Russian and Soviet strategic forces. Finally, because *C3* includes work by such Americans as Frank von Hippel and Bruce Blair, it offers the most current information available concerning strategic nuclear command, control, and communications.

Capt Gilles Van Nederveen, USAF, Retired
Fairfax, Virginia

The Road to Rainbow: Army Planning for Global War, 1934–1940 by Henry G. Gole. Naval Institute Press (<http://www.usni.org/press/press.html>), 291 Wood Road, Annapolis, Maryland 21402, 2003, 256 pages, \$34.95 (hardcover).

Pearl Harbor proved that American strategy makers were pygmies when the Japanese decimated the US battle fleet. North Africa proved that American strategy makers were hayseeds who had to learn their trade from the British. Hogwash! Henry Gole's fine little book works to undermine those myths.

Dr. Gole is certainly qualified to issue a definitive judgment on such issues. He fought in Korea as an infantryman, served in the special forces, and did five overseas tours. Starting as an enlisted man, he retired as a colonel with more than 30 years of service. Gole also served in Vietnam, as an attaché in Germany, and on the Pentagon staff in Washington. Moreover, he had teaching tours at West Point and the Army War College in Pennsylvania. He also has fine academic credentials, as attested by his PhD from Temple University; a good writing style; and a record of book reviews and articles that demonstrates his willingness to "tell it like it is."

Colonel Gole's research for this book focused on documentation found in the archives of the American Military Institute at Carlisle Barracks, Pennsylvania, especially that available in previously

unused sources from the classes of 1934–40 at the Army War College, then in Washington, DC. One of his major points maintains that an intimate connection existed between the War College and the Army General Staff, especially with the latter's War Plans Division. Frequent written and personal contacts occurred between members of the college and the staff, the greater part of the college graduates going on to serve with that staff both then and later. Gole argues that this relationship produced huge benefits, including fine strategists and combat leaders for the United States during World War II and well beyond.

The nexus between college and staff guaranteed that the students would remain connected with the “real world” instead of isolating themselves in the academic ivory tower. Yet, the War Plans Division necessarily immersed itself in the “here and now,” which inhibited the projection of its planning far into the future. The students, on the other hand, could consider strategies involving the huge potential forces that the United States could ultimately generate; thus, their planning exercises laid the groundwork for what would come. The classes of about 80 officers were divided into groups and assigned different scenarios for their planning exercises. Usually, some addressed one-on-one wars with potential (and not so potential) enemies. From 1934 onward, one of the groups worked on a plan for fighting as a member of a coalition against an enemy coalition.

The seven groups that studied the problems of fighting in the company of Allies did so with some remarkable foresight—which stood them in good stead when the war with the Axis came to pass. Yet, others assigned to the one-on-one wars that did not materialize also gained enormous benefits. One group often drew an assignment to plan a war against “Red” (Britain) even though the notion of a British invasion of North America seemed preposterous. Yet, the various assumptions and studies made in connection with that scenario indoctrinated the participants in the research, planning, and necessity of thinking at the national-strategy level. That, too, proved vital.

Everyone involved was aware of the old axiom that no scheme survives the first contact with the enemy, yet they considered the planning process valuable. Gole declares that one of the most important lessons of World War I taught the United States about the complex and time-consuming process of mobilizing for total war. An assumption running through all the planning at the War College held that the huge US economic base would allow

America to prevail if a war lasted long enough—even against the formidable coalition of Germany, Japan, and Italy in a two-ocean context. Thus, US vulnerability to defeat would exist almost exclusively in the first months of a war. Once the mobilization began to bear fruit, the victorious outcome became inevitable.

Even though the French-British combination was not as effective at holding off the Axis as the War College had assumed, America had more than two years of grace for building a great armed force and preparing giant industrial plants. Between Munich and Pearl Harbor, the US Army grew from about 150,000 men (including its Air Corps) to a million and a half. The students of the War College who had planned for mobilization in their many exercises assumed the role of decision makers who brought all that about.

Why should air warriors trouble themselves to add *The Road to Rainbow* to an already long reading list? Well, all of our wars have demonstrated that airpower is but one part of the national strength. Airmen must understand the context in which it exists, including the economic, political, psychological, naval, and ground factors, as well as public opinion and domestic political concerns. Colonel Gole’s book provides an excellent vehicle for examining that context and for enhancing one’s understanding of the importance of strategic planning and the kinds of knowledge and assumptions one needs to achieve excellence in that work. True, Gole’s story has high praise for the Army War College, but his other writings on leadership and his many book reviews demonstrate that he is no company man. His work will help build a worldview that more closely approximates reality than it otherwise might. Airmen should read it soon.

Dr. David R. Mets
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Fixing Intelligence: For a More Secure America by Lt Gen William E. Odom, USA, Retired. Yale University Press (<http://www.yalepress.yale.edu/yupbooks>), P.O. Box 209040, New Haven, Connecticut 06520-9040, 2003, 230 pages, \$24.95 (hardcover).

The need for intelligence reform is indisputable. In the wake of 9/11, many Americans were shocked to learn that intelligence and law-enforcement agencies either ignored the growing al Qaeda threat or were unable to piece together all the available clues into information that might have prevented the attacks.

Clearly, intelligence reform is an idea whose time has come—again. Revelations from the 9/11 Commission have put the issue back on the front burner, and the panel's final report contains recommendations for fixing our intelligence and security shortfalls. Congress and the president are expected to address these proposals after the November election. Emerging reforms are difficult to forecast; however, one thing is certain—"the devil is in the details." Efforts to correct the intelligence failures that contributed to 9/11 will require a major shift in organizational roles, responsibilities, and resources.

Making these required changes is the focus of *Fixing Intelligence* by Lt Gen William E. Odom, who served as director of the National Security Agency (NSA) during the Reagan administration. In a surprisingly slim volume (only 230 pages), General Odom presents a clear and concise plan for intelligence reform, built around a "national manager" concept for the intelligence community as a whole, as well as its major disciplines.

Odom believes that our intelligence woes begin at the top and proposes a major realignment for the director of Central Intelligence (DCI). Under his plan, the DCI would no longer serve as both CIA director and overall leader of our intelligence community. Splitting the post into two positions would, according to Odom, allow the DCI to serve as an advocate for the entire community and not merely as a defender of parochial CIA interests. This concept has been discussed before and warrants renewed consideration as part of intelligence reform.

General Odom also believes that the various intelligence methodologies (signals intelligence, imagery intelligence, human intelligence, etc.) would benefit from more centralized control, under the aegis of a single agency. The directors of these organizations would, in turn, function as national-level managers for that discipline, with greatly expanded control over operations, budget, personnel, and procurement functions.

This "national manager" concept is hardly new. As NSA director in the late 1980s, General Odom exercised many of the powers outlined in his reform plan. He is correct in his assertion that wider use of this model would eliminate much of the wasteful redundancy that has long permeated our intelligence community.

To underscore these problems and support his reform plan, he cites examples that are painfully familiar to anyone with a working knowledge of our existing intelligence system. As the author notes, the FBI and CIA still share responsibility for

counterintelligence (CI), despite the abysmal record this arrangement has produced. In the world of imagery intelligence (IMINT), Odom writes, virtually every agency is a "player," with little regard for the overlap and duplication that inevitably result. Under Odom's plan, CI would become the domain of a new federal agency, melding elements of the CIA and FBI. IMINT, on the other hand, would be consolidated under the National Geospatial-Intelligence Agency. Both organizations would serve as national managers for their respective disciplines. His model also envisions a slightly downsized CIA, focused on human intelligence (HUMINT) and paramilitary operations. Outside the HUMINT realm, much of the agency's analytical capabilities would be absorbed by an expanded National Intelligence Council, which would play a key role in areas such as collection management and the production of national intelligence estimates. The Defense Intelligence Agency would concentrate on analysis, with clear delineations between enemy threat assessments and analysis supporting our own weapons-procurement programs. He also offers concrete ideas for restructuring the NSA and military intelligence and creating a unified intelligence doctrine—requirements that are long overdue.

Creating a more "streamlined" intelligence community is a controversial idea, and it is unclear how much support the Odom plan would actually receive. His proposed reforms clearly step on some bureaucratic "toes," particularly those of the once-secret National Reconnaissance Office (NRO)—the long-time developer and procurement authority for overhead intelligence systems. According to Odom, the NRO exerts too much influence. During his tenure at NSA, he discovered that the NRO controlled about 40 percent of the nation's signals intelligence (SIGINT) budget, a staggering amount for an organization with 90 percent fewer personnel than NSA. Not surprisingly, he advocates a smaller NRO, which would serve as a technical and procurement advisor for the agencies that use its overhead platforms. Needless to say, his plan won't get much support in the hallways of the NRO.

While Odom's proposals have obvious merit, they are not without their flaws. His book makes only two references to measurement and signatures intelligence (MASINT), a rapidly growing discipline that will have a profound effect on the future of intelligence and war fighting. Should MASINT also have a single national manager, and, if so, which agency should assume the lead role? He never resolves that issue and fails to address an underlying considera-

tion: will the central-manager concept work for disciplines like MASINT, which draw upon the resources of multiple intelligence methodologies?

Additionally, General Odom offers no suggestions for organizing intelligence support for information warfare (IW). The author (who retired from active duty in 1988) freely admits that he lacks expertise in IW, but that's a hollow argument, given the countless books and articles that have been published on the subject. Using this material, he could have formulated potential guidelines for intelligence support of IW. As it stands, failing to adequately address the intelligence role in IW becomes a serious deficiency for Odom's reform plan and his book.

Finally—and perhaps most important for any reform plan—the Odom book glosses over the bottom-line question: will the reorganization actually "fix" the problems plaguing our intelligence system, or simply lead to more empire building in-

side the beltway? General Odom clearly believes his program would work, but practical experience raises some doubt. It's worth noting that the author's old agency (NSA) has long been hampered by a shortage of linguists, despite the power, influence, and effort of past directors, who have long functioned as de facto national managers for SIGINT. If the Odom plan can't solve this sort of fundamental problem, it would amount to little more than a bureaucratic exercise—something the intelligence community can ill afford at this time.

Despite these shortcomings, General Odom has written a provocative book, producing a useful template for genuine intelligence reform. Amid the efforts to make our intelligence agencies more responsive (and prevent another 9/11), the ideas advanced in *Fixing Intelligence* deserve serious and thoughtful consideration.

Maj Gary Pounder, USAF, Retired
Wright-Patterson AFB, Ohio



Touch and Go

In this section of "Net Assessment," you will find additional reviews of aviation-related books and CD-ROMs but in a considerably briefer format than our usual offerings. We certainly don't mean to imply that these items are less worthy of your attention. On the contrary, our intention is to give you as many reviews of notable books and electronic publications as possible in a limited amount of space.

That Others May Live: USAF Air Rescue in Korea

by Forrest L. Marion. Air Force History and Museums Program (<http://www.airforcehistory.hq.af.mil/publications.htm>), 200 McChord Street, Box 94, Bolling AFB, Washington, DC 20332-1111, 2004, 57 pages, \$5.25 (softcover).

In this tightly packaged treatise, Forrest Marion, a historian assigned to the Air Force Historical Research Agency at Maxwell AFB, Alabama, and an Air Force Reserve lieutenant colonel, presents us with a focused look at rescue operations in the Korean War. He proceeds chronologically through the activation and deployment of rescue units into the theater and then presents vignettes and anecdotal data that highlight the heroic efforts of our rescue crews to recover downed Airmen, perform countless medical evacuations, and support special operations.

This is rich history. Key to the story is the evolution of technology, particularly the helicopter,

that allowed us to recover our isolated personnel. Introduced late in World War II, this aircraft saw employment as a recovery vehicle in Korea after we developed the necessary doctrine and techniques. Marion documents this process well, but he also does an excellent job of highlighting the innovative use of other aircraft such as the SA-16, SB-17, L-5, and SB-29 as we adapted them to this mission area as well. In fact, he notes several items that have become basic staples of rescue operations: (1) the need for, development of, and use of survival radios; (2) the need for centralized command and control; (3) the development of the task-force concept; (4) rescue as a coalition asset; (5) the need for support aircraft other than recovery vehicles; and (6) recognition that combat rescue is not just an add-on to air combat operations but a specialized mission that requires its own focus and family of experts.

Marion presents all of these issues as they occurred, using well-focused research and interviews

with actual participants to show how they evolved and how we dealt with them creatively. One quotation is especially telling. After being recovered, one trooper declared, "When I saw that helicopter land it looked like a mechanical angel coming—it was the answer to a man's prayer." About 51 years later, a Navy flyer expressed that sentiment almost exactly after a helicopter plucked him out of the desert of Iraq. The result, then and now, is the same. When we send our young men and women into combat, we do not expect them to die for their country. We want them to come home, and our propensity to develop and sustain a rescue capability clearly symbolizes that desire.

I do have one criticism. The study needs more maps. Marion explains many of the actions in geographical terms, but without detailed maps, a reader at times has difficulty following the narrative. Regardless, *That Others May Live* was a pleasure to read. Korea proved critical to the development of our rescue forces in their current form. Marion has captured a fundamental part of that heritage, and I highly recommend the fruit of his efforts to anyone looking for a more detailed knowledge of rescue operations or just good flying stories.

Col Darrel Whitcomb, USAF, Retired
Fairfax, Virginia

Chennault: Giving Wings to the Tiger by Martha Byrd. University of Alabama Press (<http://www.uapress.ua.edu>), Box 870380, 20 Research Drive, Tuscaloosa, Alabama 35487-0380, 2003, 472 pages, \$27.95 (softcover).

Martha Byrd's *Chennault: Giving Wings to the Tiger*, first published 1987, has long been regarded as the best biography of this colorful Airman. Thus, I commend the decision by the University of Alabama Press to reissue it in paperback. (For a detailed analysis of available Chennault biographies, see Col Phil Meilinger's *Airmen and Air Theory* [Maxwell AFB, AL: Air University Press, 2001], 26–29, <http://www.maxwell.af.mil/au/aul/aupress/Books/Meil-Airmen/Airmen.pdf>.) Byrd's book is not a simple, glorified portrayal of the leader of the "Flying Tigers" or of the mistreated advocate of fighter aviation in 1930s; rather, the author paints a complex picture of Chennault. At times he could be a most difficult man, but at other times an endearing, sympathetic character. Despite his frequently tense relations with his superiors, he engendered fierce loyalty among many of his subordinates. Although Chennault had little formal education (a

year as an agricultural student at Louisiana State University and a year at a teachers' training school), he nevertheless developed a sophisticated understanding of Chinese culture. Although *Chennault* is an easy-to-read biography of a famous Airman, it leaves the reader with a great deal to ponder. How does one successfully advocate within a large bureaucracy without antagonizing the leadership? How do people who aspire to lead and mentor others deal with the Chennaults of the world—those difficult subordinates who may have a great deal to offer? Individuals who would successfully advocate airpower and space power in the twenty-first century can find food for thought in Byrd's *Chennault: Giving Wings to the Tiger*. It is good to have this classic biography back in print.

Col John Albert, PhD, USAF, Retired
Montgomery, Alabama

I Remember Korea: Veterans Tell Their Stories of the Korean War, 1950–53 by Linda Granfield. Clarion Books (<http://www.houghtonmifflinbooks.com/clarion>), Houghton Mifflin Company, 222 Berkeley Street, Boston, Massachusetts 02116, 2003, 128 pages, \$16.00 (hardcover).

Published by Houghton Mifflin's Clarion division, a department that targets children and teens, *I Remember Korea* contains just over 30 first-person accounts from veterans of that "forgotten war." Linda Granfield partitions her book into four sections, the first covering 12 stories from veterans who fought in the initial stages of the war—from the opening North Korean onslaught through MacArthur's counterattack and the Chinese intervention. The second section, "Food, Fun, and Finally Rest," includes five stories of veterans from 1951. The third switches from stories of combat and everyday life to equally poignant accounts of soldiers leaving their families and losing brothers in the war; it even includes a chapter written from the North Korean perspective. The last section offers six stories about how the war affected the veterans after their return home. *I Remember Korea* is an excellent book for junior- or senior-high students who wish to understand war as recounted by the people who fought it. For that reason, it would be a useful addition to the reading material for an Air Force Junior ROTC detachment.

Lt Col Jim Gates, USAF
Washington, DC



Mission Debrief

Air and Space Power Journal, the US Air Force's professional journal, is published in English, Spanish, Portuguese, and Arabic. A French edition will begin publication in 2005. Each version has its own personality as well as an editor—a native speaker of the particular language and an expert in the region of coverage—who selects the journal's content. We're always looking for good, thought-provoking articles 2,500 to 5,000 words in length, written in any of our published languages. All submissions will be edited in accordance with the standards set forth in the *Air University Style Guide for Writers and Editors* (available online at <http://www.maxwell.af.mil/au/aul/aupress/Resources/style/austylgd.pdf>). For details, please see our guidelines for submitting articles at <http://www.airpower.maxwell.af.mil/airchronicles/howto1.html>. You can contact us by e-mail at aspj@maxwell.af.mil; regular mail at *Air and Space Power Journal*, 401 Chennault Circle, Maxwell AFB AL 36112-6428; phone at DSN 493-5322 (commercial [334] 953-5322); or fax at DSN 493-5811.

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The Editor

OUR CONTRIBUTORS



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Dr. Christopher J. Bowie (BA, University of Minnesota; PhD, Oxford University), a member of the Senior Executive Service, is deputy director of Air Force Strategic Planning, Deputy Chief of Staff for Plans and Programs, Headquarters US Air Force, Washington, DC. Previously, he served at Northrop Grumman Corporation as senior analyst with the Analysis Center; manager of Strategic Planning, Integrated Systems Sector; and manager of Strategic Studies, B-2 Division. He was affiliated with the RAND Corporation as both a senior staff member and an associate program director. He also served as an issues and policy analyst with the Office of the Secretary of the Air Force. Dr. Bowie is the author of *The New Calculus* (RAND, 1993), which examines airpower's changing role in US national security strategy, and *Trends in the Global Balance of Airpower* (RAND, 1995), which analyzes historical and projected trends in the world's air and missile forces.



Dr. Stephen O. Fought (BS, Georgia Institute of Technology; MS, University of Southern California; PhD, Brown University) is a professor in the Warfighting Department, Air War College, Maxwell AFB, Alabama, and a former dean of academics at that school. He is also a member of London's International Institute for Strategic Studies. During an earlier tour at the Naval War College, Dr. Fought held the Forrest Sherman Chair of Public Diplomacy and served as a department director, course chair, and professor. During his 20-year Air Force career, he carried out operational and headquarters assignments related to his experiences as a B-52D pilot. A senior arbitrator and mediator, Dr. Fought is a graduate of two courses offered by the Harvard-MIT Program on Negotiation, a distinguished graduate of Squadron Officer School, and a graduate (with highest distinction) of the Naval War College.



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Squadron Leader Sopby Gardner (MA, MPhil, University of Cambridge) is officer commanding, Operations Squadron, Royal Air Force (RAF) Cottesmore. She worked in the United Kingdom's (UK) National Headquarters, collaborated with US Central Command in Al Udeid Air Base, Qatar, during phase three of Operation Iraqi Freedom as the military aide and personal staff officer to the commander of UK forces. She has subsequently been closely involved in the USAF and RAF engagement initiative, which seeks to ensure that our vitally important relationship continues to flourish and develop into the future.



Group Capt Christopher Finn (MPhil, Cambridge University) is director of Defence Studies, Royal Air Force (RAF), based at Shrivenham, England. After navigator training and conversion to the Buccaneer aircraft, he served with the 809th Naval Air Squadron (HMS *Ark Royal*), XV Squadron (RAF Laarbruch), 237th Operational Conversion Unit (RAF Honington); Headquarters 18th Group, 208th Squadron (RAF Lossiemouth); and the Central Tactics and Trials Organisation. A specialist in electronic warfare, weaponry, and tactics, he has over 3,200 flying hours—2,240 of those in the Buccaneer. During the Gulf War, he served in Air Headquarters, Riyadh, Saudi Arabia. Group Captain Finn also spent 20 months as an airpower specialist on the directing staff of the Joint Services Command and Staff College.



Lt Col Paul D. Berg (BS, USAFA; MA, University of North Dakota; MA, University of Alabama; PhD, Auburn University) is chief, Professional Journals Division, at the College of Aerospace Doctrine, Research and Education. Previously, he served on the Air Command and Staff College (ACSC) faculty where he directed the Air and Space Power Studies course. Colonel Berg is a command pilot with over 5,800 flying hours, mostly in B-52 and RC-135 aircraft. He is a graduate of the ACSC resident program and the Air War College nonresident program.



David Hobbs is curator and principal historian of the Fleet Air Arm Museum at Royal Naval Air Station Yeovilton. Before retiring as a Royal Navy commander in 1997, he flew both fixed-wing aircraft and helicopters ashore and afloat. His service afloat included the aircraft carriers *Victorious*, *Hermes*, *Albion*, *Bulwark*, *Centaur*, *Ark Royal* (IV), and *Ark Royal* (V). His publications include *Aircraft Carriers of the Royal and Commonwealth Navies* (1996), *Aircraft of the Royal Navy since 1945* (1982), *Naval Staff Study-The Invincible Class and their Air Groups* (1997), and *Ark Royal-The Name Lives On* (1985). He has contributed to *The Battle of the Atlantic 1939–1945* (1994), *Men of War: Great Leaders of World War II* (1992), and *The Face of Naval Battle* (2003). He has established a reputation as a broadcaster on naval aviation matters on UK radio and television.



Wing Cdr Redvers "Red" Thompson (BS, Manchester Institute of Science and Technology; MS, Cranfield University) is an RAF exchange officer and has the post of deputy commander (academics) of the 505th Training Group, 505th Command and Control Wing, Hurlburt Field, Florida. Previously he served in billets directly involved in the operational delivery of air C2 on both national UK and coalition operations (Desert Fox, Allied Force, Palliser [Sierra Leone], Enduring Freedom, and Iraqi Freedom). Wing Commander Thompson is a fast-jet navigator and qualified weapons instructor with both overland and maritime strike/attack experience gained on five operational flying tours. His flying experience included a previous USAF exchange on F-111s at Mountain Home AFB, Idaho. Wing Commander Thompson is a graduate of RAF Basic Staff Course and Royal Navy Advanced Staff College.



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